IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

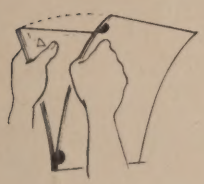
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

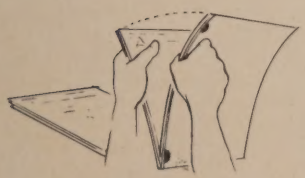


1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 479 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ MARCH, 1960

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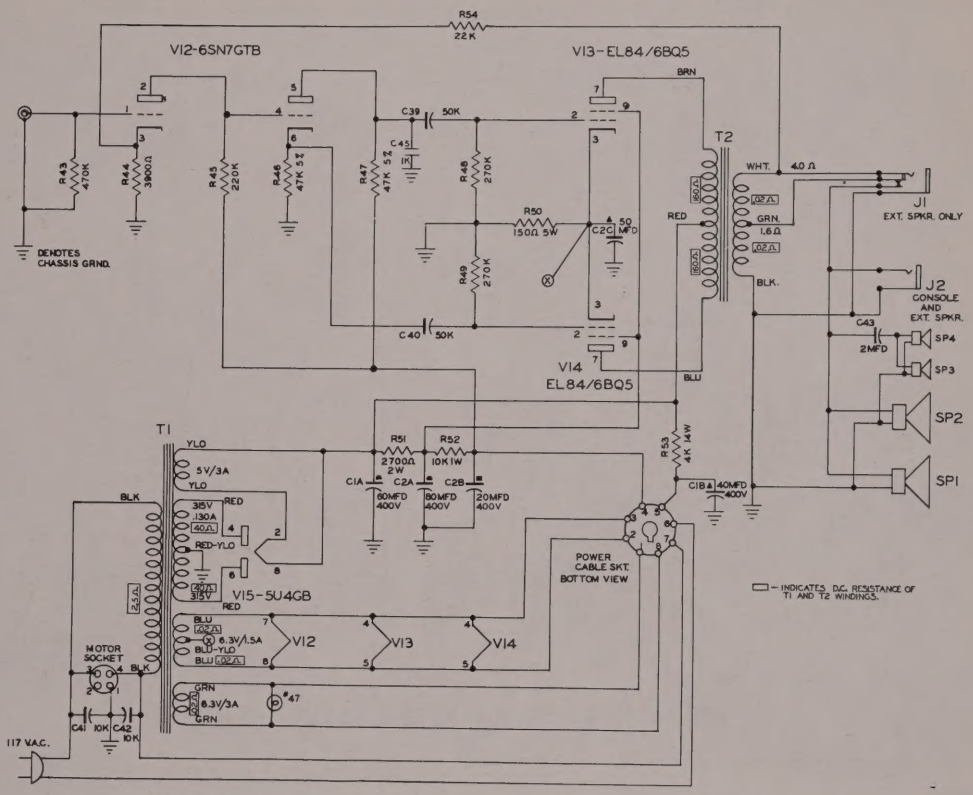
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

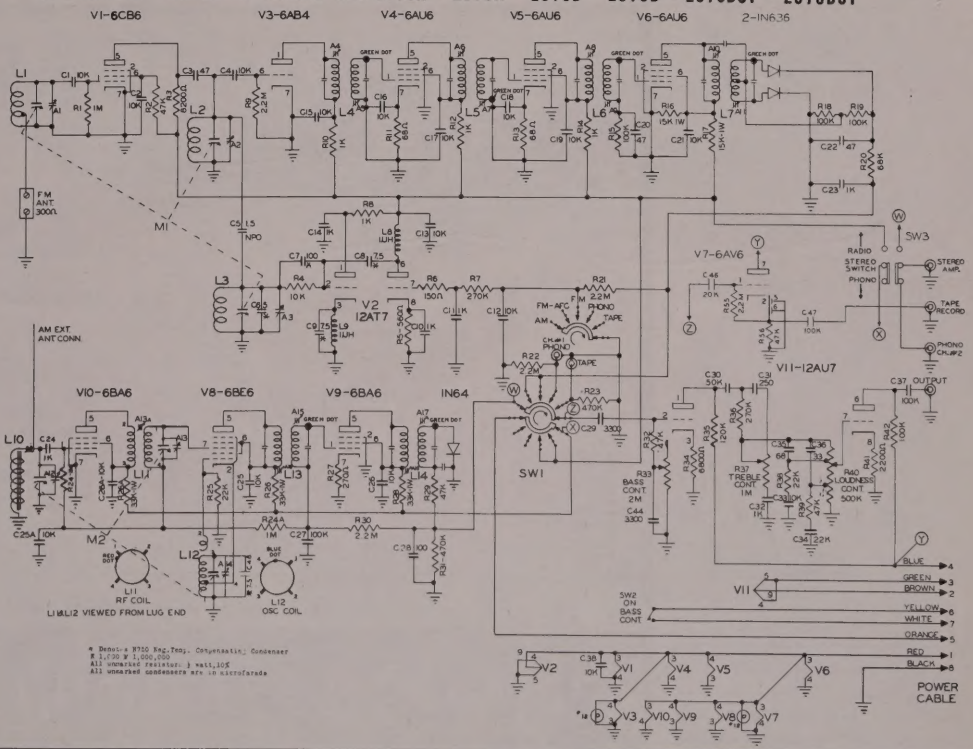
IN THIS ISSUE OF THE SERVICER:

AIRLINE MODELS GAA-2675A, B, BST, GAA-2676A, B, BST

AUDIO CHASSIS SCHEMATIC MODELS GAA-2675A - 2676A - 2675B - 2676B - 2675BST - 2676BST

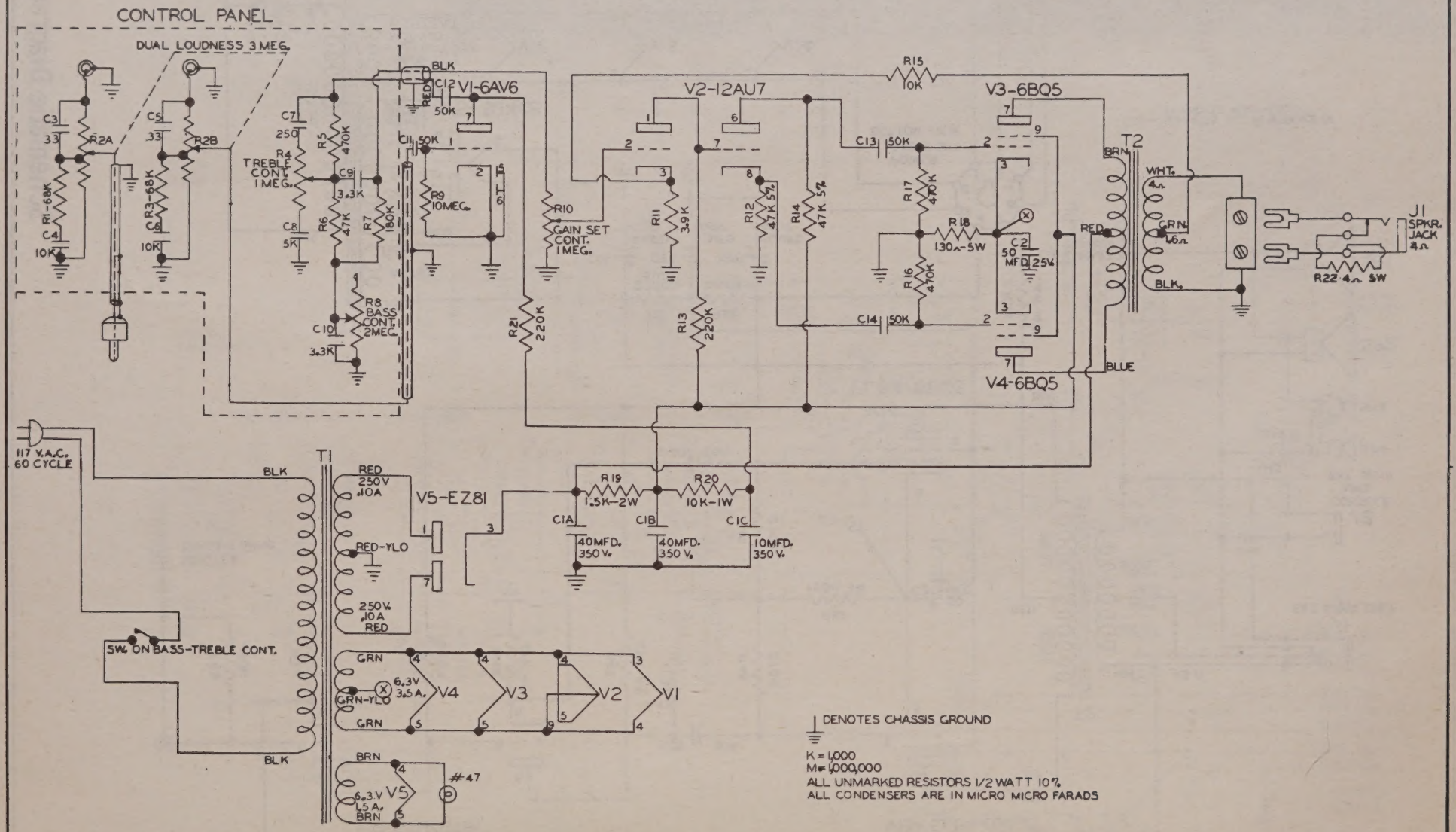


R.F. CHASSIS SCHEMATIC MODELS GAA-2675A - 2676A - 2675B - 2676B - 2675BST - 2676BST



Schematic Diagrams Courtesy of Montgomery Ward & Co.

2nd CHANNEL AMPLIFIER MODELS GAA-2675BST and GAA-2676BST



DENOTES CHASSIS GROUND

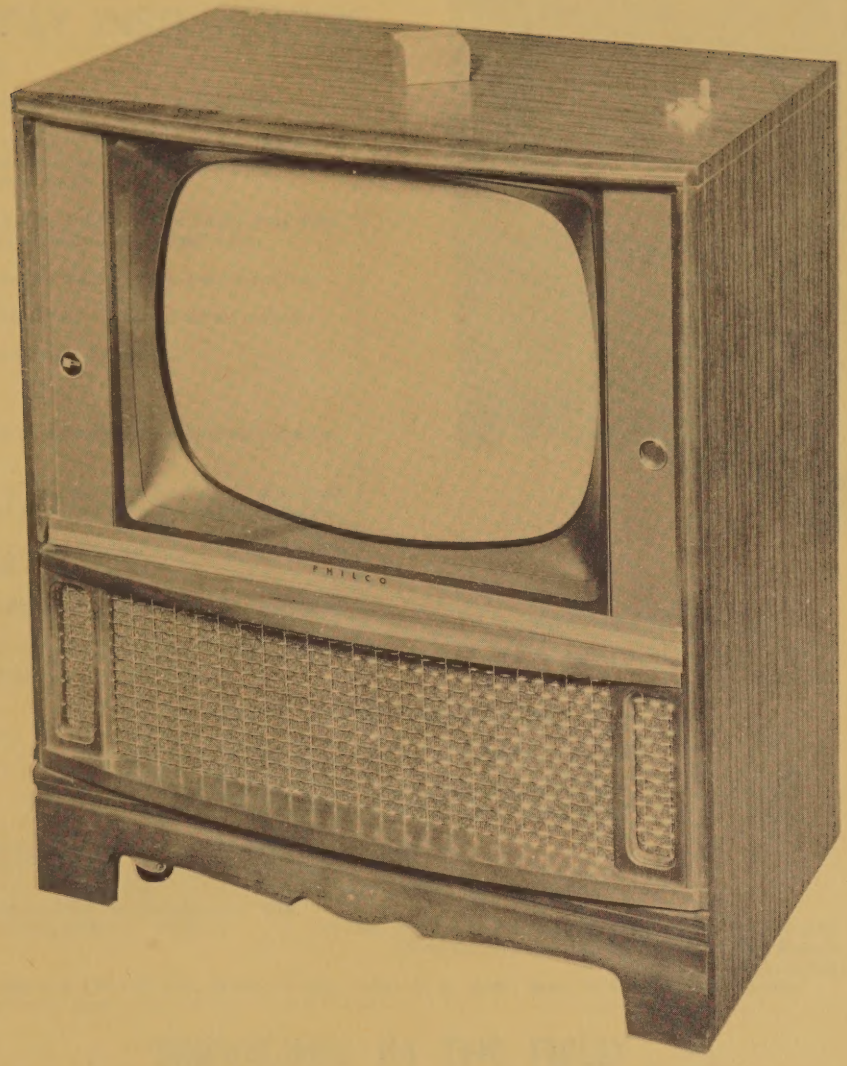
K = 1,000
M = 1,000,000
ALL UNMARKED RESISTORS 1/2 WATT 10%
ALL CONDENSERS ARE IN MICRO MICRO FARADS

Schematic Diagram Courtesy of Montgomery Ward & Co.

PHOTOFACT® Folder with CIRCUITRACE*

PHILCO CHASSIS 10L31, 10L31U, 10L32, 10L32U

PHILCO CHASSIS 10L31, 10L31U, 10L32, 10L32U



PHILCO CHASSIS 10L31, 10L31U, 10L32, 10L32U

MODEL H4673MR (CH. 10132)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PHOTOFACT® Folder with CIRCUITRACE®

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PHILCO CHASSIS 10L31, 10L31U, 10L32, 10L32U

PHILCO CHASSIS 10L31, 10L31U, 10L32, 10L32U

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 3 push-on type knobs from top of cabinet.
2. Remove 9 wood screws holding rear cover. Remove 1 push-on type knob from rear of cabinet. Remove antenna leads. Remove rear cover.
3. Remove 2 tuner leads, 2 power tuner leads, yoke plug, HV lead, picture tube socket and speaker leads.
4. Remove 2 wood screws holding upper control bracket.
5. Remove nut holding Off-On Volume Contrast control.
6. Remove 4 chassis bolts from bottom.
7. Remove chassis.
8. Remove 2 wood screws holding tuner mounting bracket. Remove tuner.
9. Remove plug from Remote Control chassis, plug from preamplifier, and pilot lamp from its mounting bracket.
10. Remove 3 bolts holding Remote Control chassis. Remove Remote Control chassis.
11. Remove 2 nuts holding Preamplifier. Remove Preamplifier.

MODEL H4673MR (CH. 10132)

TRADE NAME	Philco	MODELS	CHASSIS
		H4248E, H4250, E, L, H4253, L, H4668, L, H4670, L, W, H4672, L, W	10L31
		UH4248E, UH4250, E, L, UH4253, L, UH4668, L, UH4670, L, W, UH4672, L, W	10L31U
		H4668LR, R, H4673LR, R (With Remote Control RC-50)	10L32
		UH4668LR, R, UH4673LR, R (With Remote Control RC-50)	10L32U
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.		
TYPE SET	Television Receiver with Remote Control		
TUBES	TV: VHF-Sixteen, UHF-Seventeen, Remote Control Receiver: Six		
TRANSISTORS	Remote Control Transmitter: One		
POWER SUPPLY	105-120 Volts AC, 60 Cycle	RATING 235 Watts, 2.2 Amp. @ 117 Volts AC (With Remote Control) 270 Watts, 2.6 Amp. @ 117 Volts AC (With Remote Control, while tuning)	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

TV: A fuse is used for low voltage power supply protection. (For location, see "Cabinet - Rear View.")
A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis - Top View".)
Remote Control Receiver: A fuse wire is used for filament protection. (For location, see M7 in photo "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

AGC

The AGC may be varied by means of a Range switch. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horiz. Centering(Horiz. Range) control. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width switch. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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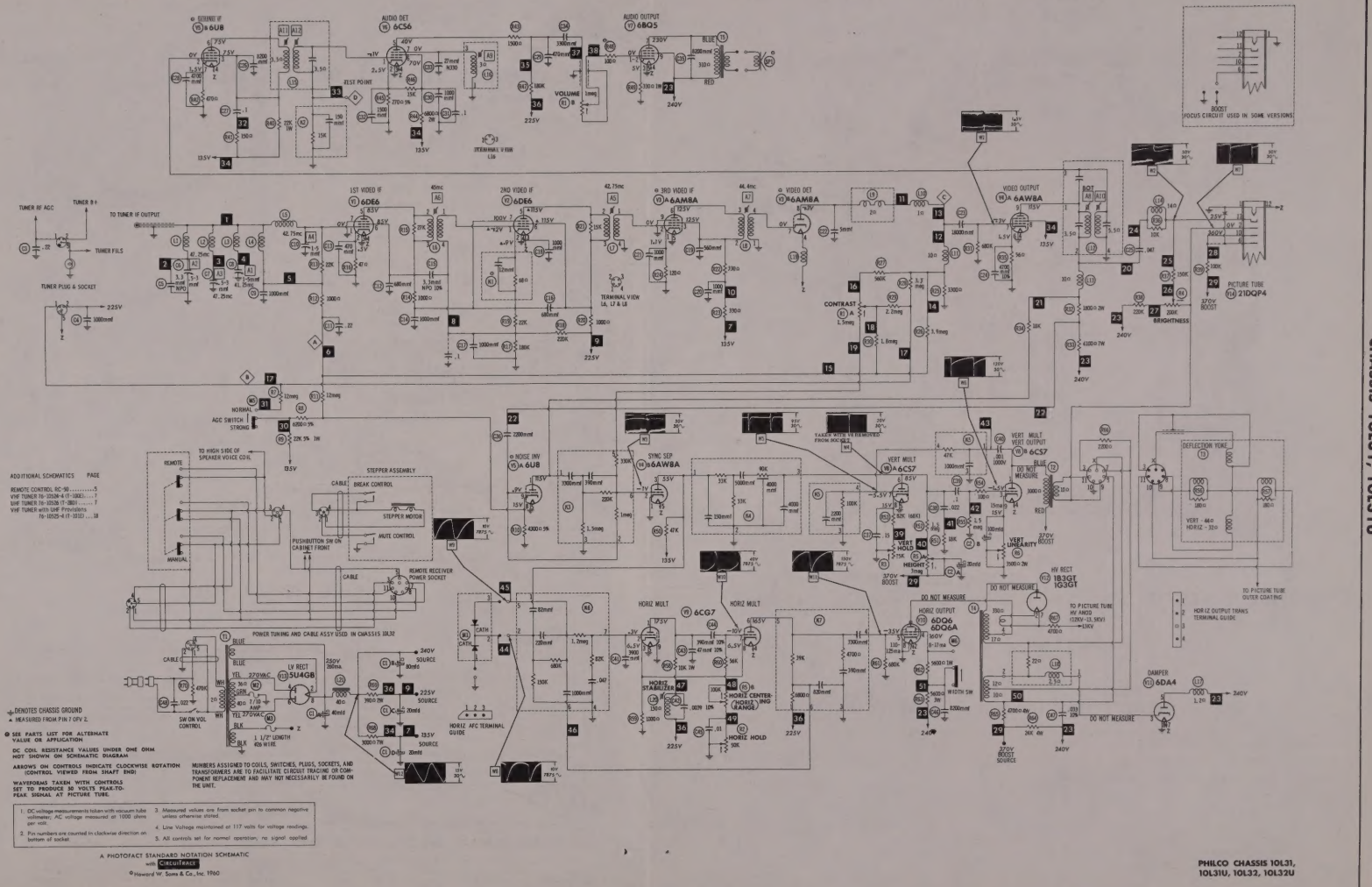
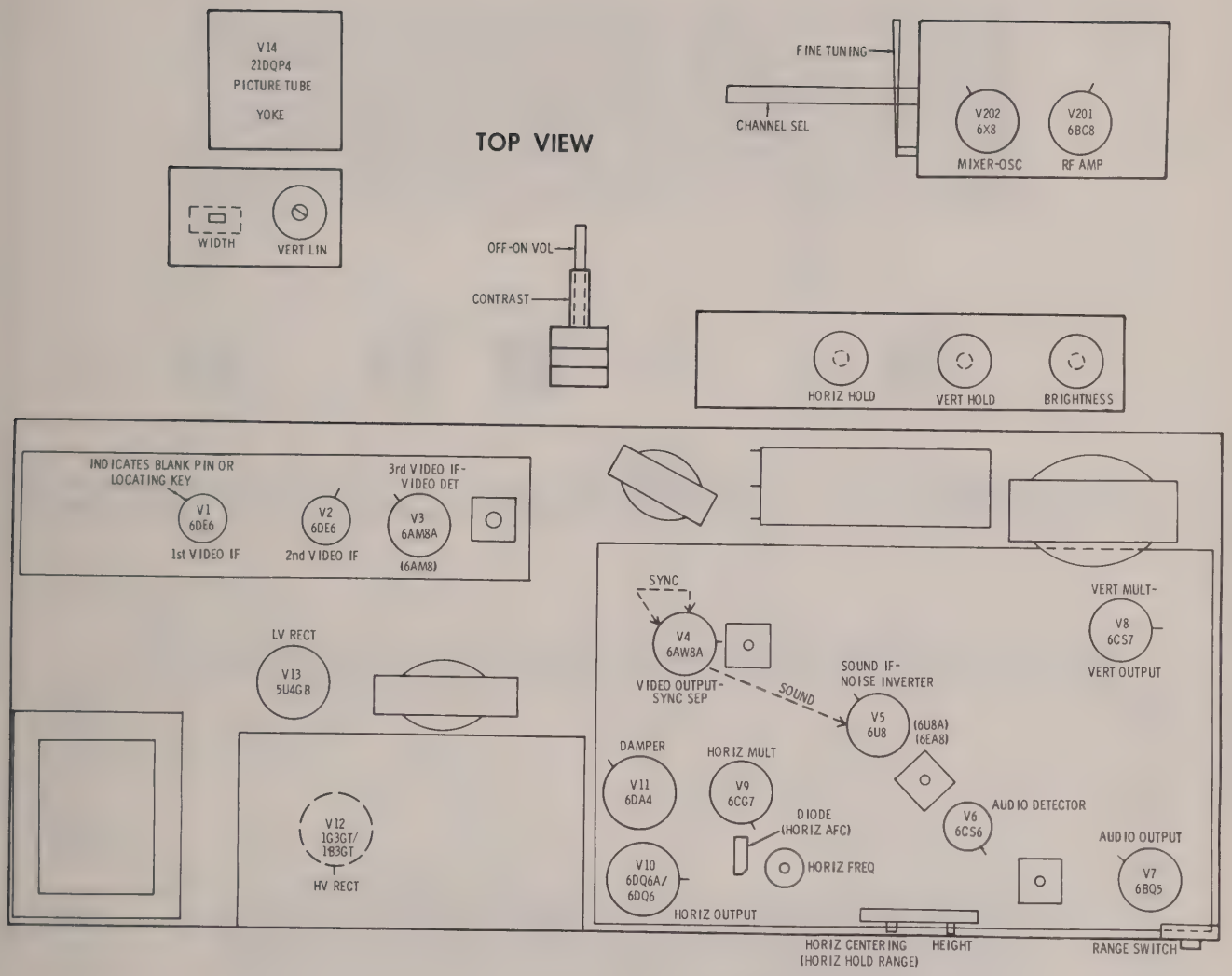
JA775

SET 479 FOLDER 1


TUNER RF AGC
TUNER B+
TO TUNER IF OUTPUT
TUNER FILS
TUNER PLUG & SOCKET
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO DET
VIDEO OUTPUT
CONTRAST
BRIGHTNESS
PICTURE TUBE
AUDIO DET
AUDIO OUTPUT
VOLUME
SYNC SEP
VERT MULT
VERT OUTPUT
VERT LINEARITY
VERT HOLD
HEIGHT
DEFLECTION YOKE
HORIZ MULT
HORIZ OUTPUT
HORIZ STABILIZER
HORIZ CENTERING (HORIZ RANGE)
HORIZ HOLD
WIDTH SW
DAMPER
HV RECT
TO PICTURE TUBE HV ANOD
TO PICTURE TUBE OUTER COATING
HORIZ OUTPUT TRANS TERMINAL GUIDE
HORIZ AFC TERMINAL GUIDE
NOISE INV
NORMAL
AGC SWITCH
STRONG
REMOTE
MANUAL
STEPPER ASSEMBLY
CABLE BREAK CONTROL
STEPPER MOTOR
PUSHBUTTON SW ON CABINET FRONT
MUTE CONTROL
REMOTE RECEIVER POWER SOCKET
TO HIGH SIDE OF SPEAKER VOICE COIL
POWER TUNING AND CABLE ASSY USED IN CHASSIS 10L32
LV RECT
SW ON VOL CONTROL
BOOST
FOCUS CIRCUIT USED IN SOME VERSIONS
DO NOT MEASURE
ADDITIONAL SCHEMATICS PAGE
REMOTE CONTROL RC-90 5
VHF TUNER 76-10536-4 (T-10X2) 7
UHF TUNER 76-10526 (T-2B2) 7
VHF TUNER with UHF Provisions 76-10525-4 (T-10X3) 18
DENOTES CHASSIS GROUND
MEASURED FROM PIN 7 OF V 2.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
© Howard W. Sams & Co., Inc. 1960
PHILCO CHASSIS 10L31, 10L31U, 10L32, 10L32U

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

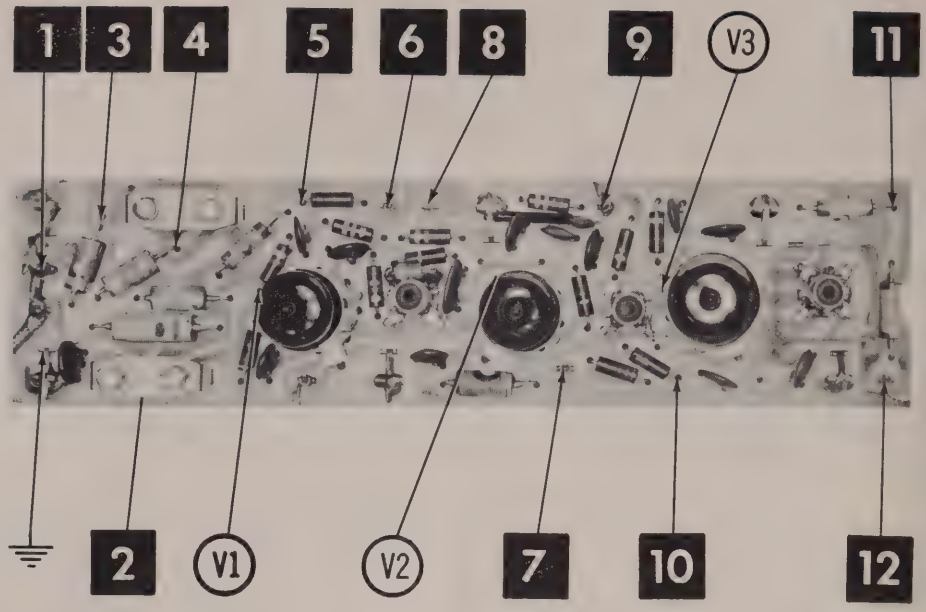
POWER SUPPLY FAILURE
No raster, no sound — Fuse (LV Power), Fuse (Filament), V13

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. AFC), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V4
No horiz. sync V4
No vert. or horiz. sync V4

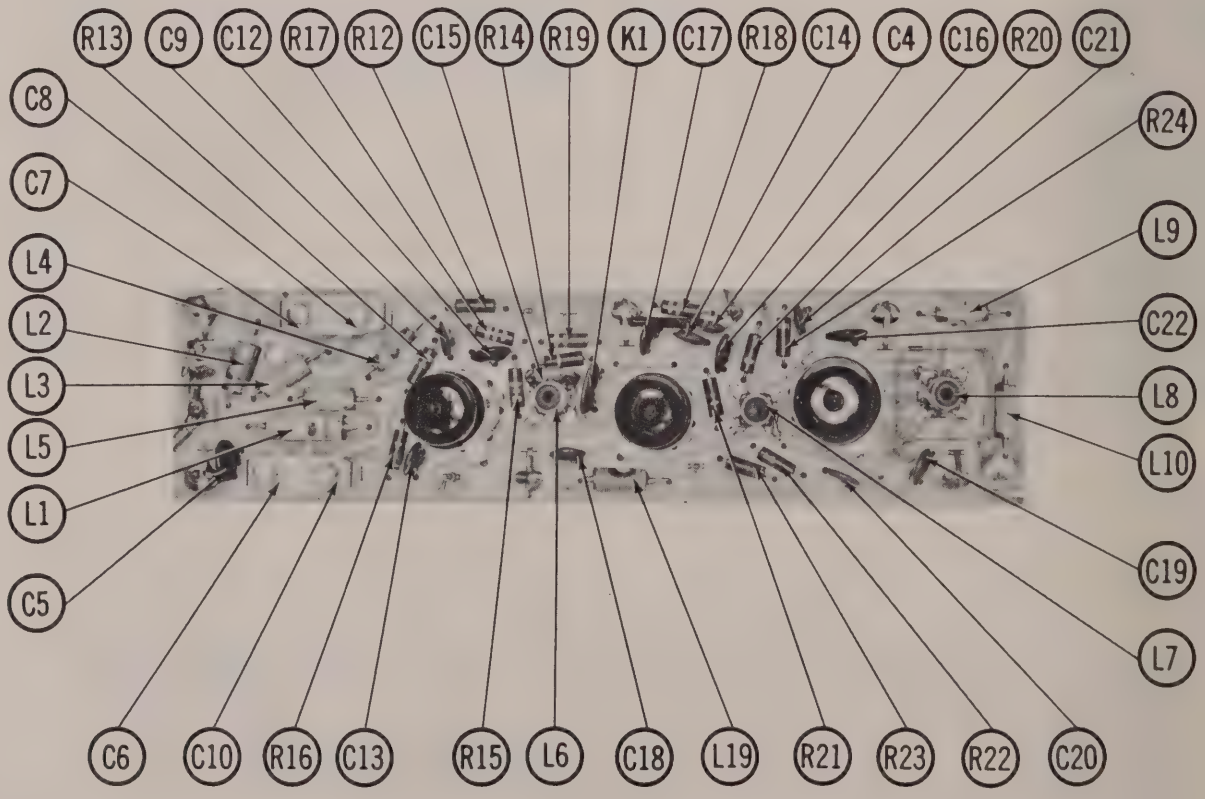
CircuiTrace Numbers 1 thru 12



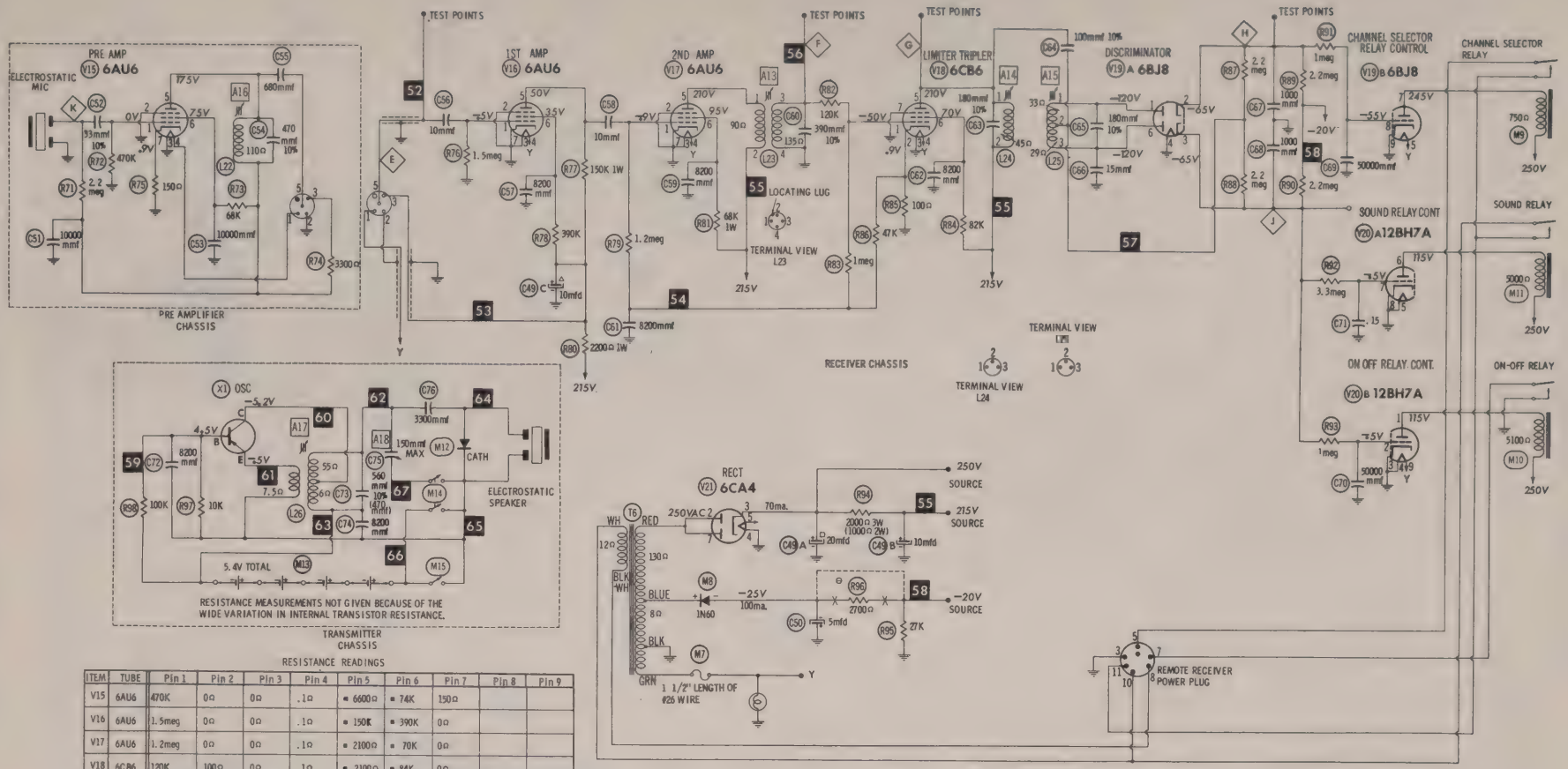
A Howard W. Sams CIRCUITRACE* Photo

VIDEO IF PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



VIDEO IF PRINTED BOARD



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V15	6AU6	470K	0Ω	0Ω	.1Ω	▪ 6600Ω	▪ 74K	150Ω		
V16	6AU6	1.5meg	0Ω	0Ω	.1Ω	▪ 150K	▪ 390K	0Ω		
V17	6AU6	1.2meg	0Ω	0Ω	.1Ω	▪ 2100Ω	▪ 70K	0Ω		
V18	6CB6	120K	100Ω	0Ω	.1Ω	▪ 2100Ω	▪ 84K	0Ω		
V19	6BJ8	2.2meg	2meg	1.8meg	0Ω	.1Ω	2.2meg	▪750Ω	3meg	0Ω
V20	12BH7A	▪5100Ω	5.2meg	0Ω	0Ω	0Ω	▪ 5000Ω	3meg	0Ω	.1Ω
V21	6CA4	138Ω	NC	¶	0Ω	.1Ω	NC	138Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
▪ MEASURED FROM PIN 3 OF V21.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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REMOTE CONTROL RC-50

PHILCO CHASSIS 10L31, 10L31U

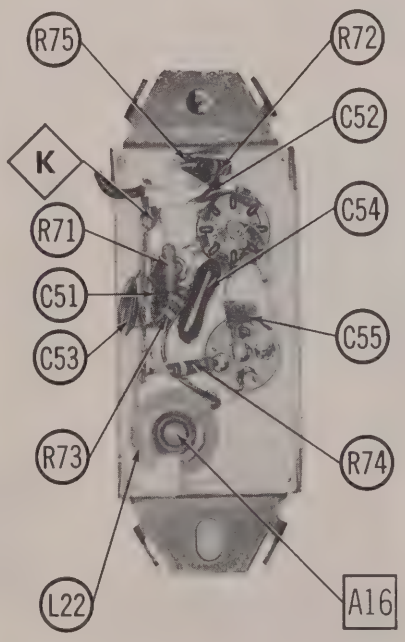
REMOTE CONTROL
ALIGNMENT INSTRUCTIONS

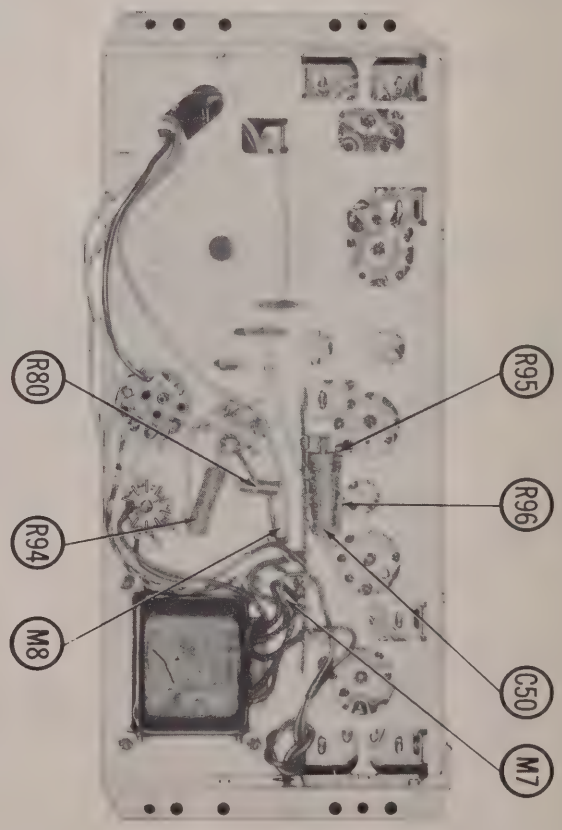
REMOTE CONTROL RECEIVER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.05mfd	High side to point (E). Low side to chassis.	39KC		AC probe to point (F). Common to chassis.	A13	Adjust for maximum deflection. Keep generator output adjusted for 5 volts on VTVM during this step, then increase generator output for 10 volt reading before going on to next step.
2.	"	"	"		AC probe to point (G). Common to chassis.	A14	Adjust for maximum deflection.
3.	"	"	"		DC probe to point (H). Common to point (J).	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
4.	"	High side to point (K). Low side to chassis.	39KC (At .1 volt RMS).		Terminate output end of receiver input cable with 47K resistor. Connect VTVM (AC) across termination.	A16	Adjust for maximum deflection.

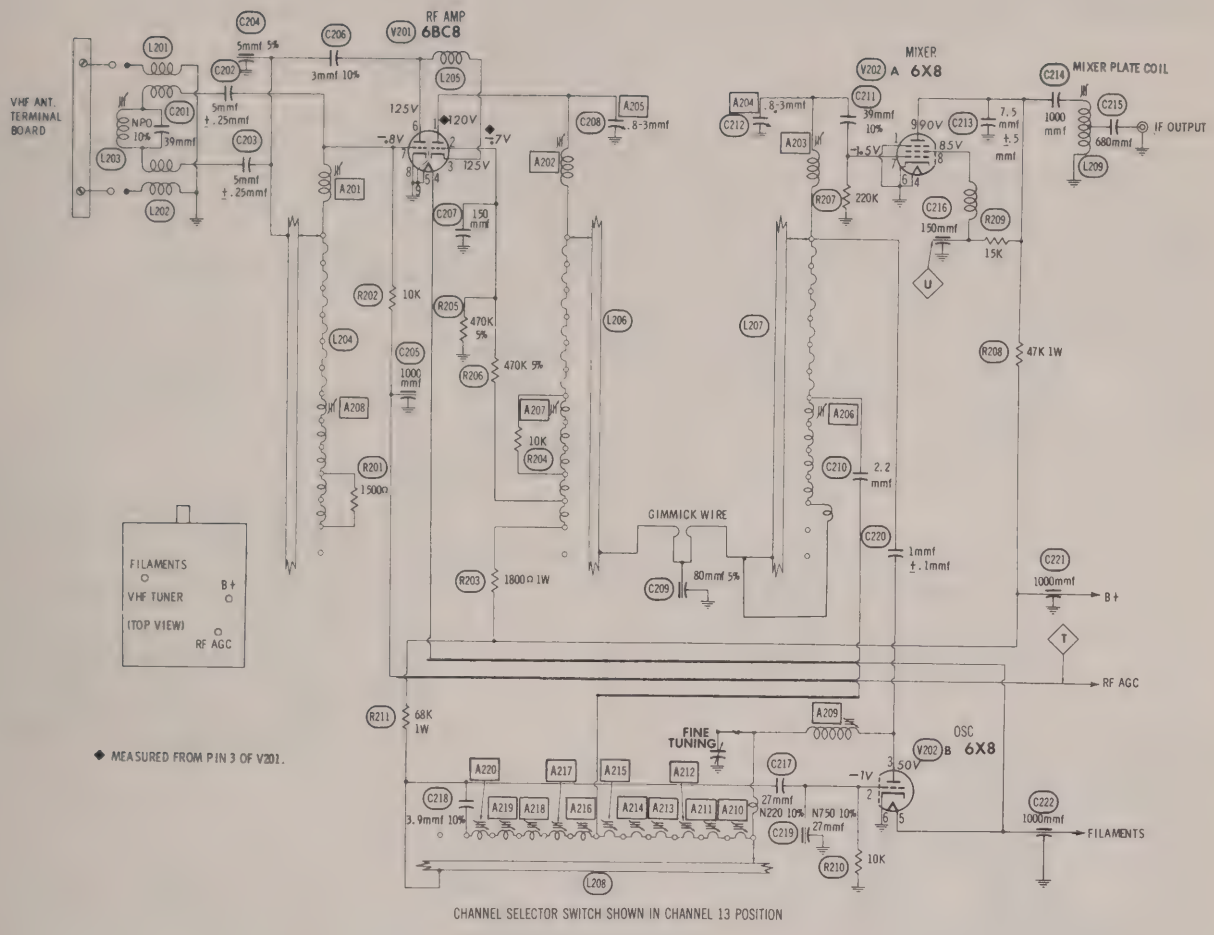
REMOTE CONTROL TRANSMITTER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.		Connect to the vertical input terminals of an oscilloscope.	39KC		Connect an unshielded test lead to the horizontal input terminals. Remove cover from transmitter and place test lead near transmitter.	A17	Depress Channel Selector contact and adjust scope gain or position test lead for suitable Horizontal sweep. Adjust A17 for 1 to 1 ratio between Vertical and horizontal sweep.
6.		"	37KC		"	A18	Depress Sound and On-Off Selector and adjust for 1 to 1 ratio on scope.
7.		"	40KC		"		Place cover on transmitter but do not replace screws. Due to metal in the cover, frequency will shift so that scope should show 1 to 1 ratio now with Channel Selector depressed. Retouch A17 if necessary.
8.		"	38KC		"		Depress Sound and On-Off Selector and check for 1 to 1 ratio on scope. Retouch A18 if necessary.





REMOTE CONTROL PREAMP & RECEIVER –BOTTOM VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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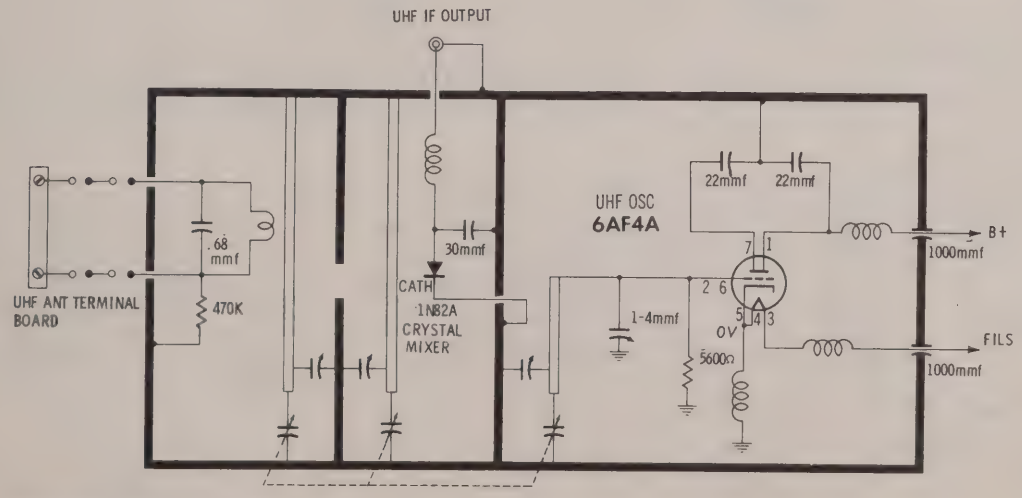
VHF TUNER 76-10524-4 (T-100E)



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER 76-10526 (T-28D)

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNER T100, T101

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools:

A201, A202, A203, A206, A207, A208, A221	General Cement #5009, 8195, 8274, 8275, 8728, 8987 Walsco #2531
A204, A205	General Cement #5000, 5003, 5009, 8290 Walsco #2520, 2523, 2525, 2537
A209 thru A220	General Cement #8729, 8988, 8989, 9294 Walsco #2532, 2538
Mixer Plate Coil	General Cement #8606, 8606L, 8282, 9295 Walsco #2526, 2543, 2544, 2545

VHF RF AND MIXER ALIGNMENT

Set Range switch to "Normal".
Connect the negative lead of a 1.5 volt bias supply to point (T). Positive to chassis.
Detune the Mixer Plate coil by connecting a 10 to 20mmf capacitor across it.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC	210MC	13	Vert. Amp. thru 10K to point (U) Low side to chassis.	A201	Adjust for maximum amplitude.
2.	"	"	"	211.25MC	"	"	A202, A203	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. Adjust A202 to set marker level, A203 for proper tilt.
3.	"	"	177MC	174.0MC 180.0MC	7	"	A204, A205	Adjust for tilt as shown in Fig. 202. Recheck step 2 and retouch, if necessary. Repeat step 3.
4.	"	"	85MC	82.0MC 85.0MC 88.0MC	6	"	A206, A207, A208	Turn A206 counterclockwise until a single peak appears. Adjust A207 until peak falls at 85MC. Adjust A208 for maximum gain and symmetry of single peak. Retouch A206 and A207 for symmetrical response centered about 85MC.

VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range.
This procedure uses the traps of the Video IF strip. Make certain Video IF Alignment is correct.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	209.75MC (400∿ 30% AM Mod)	13	Across Video Detector load	A209	Adjust for MINIMUM scope indication.
			203.75MC	12		A210	
			197.75MC	11		A211	
			191.75MC	10		A212	
			185.75MC	9		A213	
			179.75MC	8		A214	
			173.75MC	7		A215	
			81.75MC	6		A216	
			75.75MC	5		A217	
			65.75MC	4		A218	
			59.75MC	3		A219	
			53.75MC	2		A220	

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

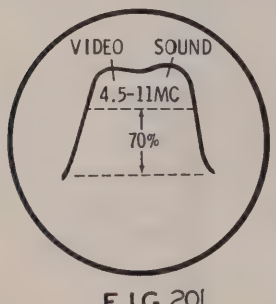
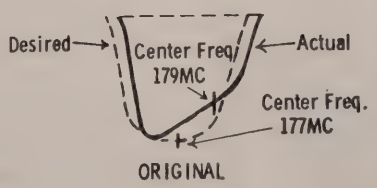


FIG.201



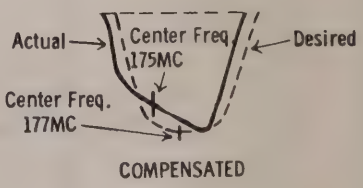


FIG.202

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A4 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A5 thru A11 .... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 6 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 3 volt bias supply to point (B). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	45.8MC (400∿ AM Mod)	Any non-interfering channel	Vert. Amp. thru 10K to point (C). Low side to chassis. (Across Video Det. load)	Mixer Plate Coil	Adjust for maximum on scope.
2.	"	"	"	41.25MC	"	"	A1	Adjust for MINIMUM on scope.
3.	"	"	"	47.25MC	"	"	A2, A3	"
4.	"	"	"	42.75MC	"	"	A4, A5	Adjust for maximum on scope.
5.	"	"	"	45.0MC	"	"	A6	"
6.	"	"	"	44.4MC	"	"	A7	"
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	"	65.75MC	4	"	Fine Tuning	Adjust for MINIMUM on scope. Leave Fine Tuning at this setting.
8.	"	"	69MC (10MC Swp)	42.75MC 45.75MC	"	"		Use only enough sweep generator output to provide a usable pattern on scope. Check for response similar to Fig. 1. If necessary retouch Mixer Plate Coil and A4 thru A7 for desired response. Position 45.75MC marker with Mixer Plate Coil and A6. Position 42.75MC marker with A4 and A5. Flatten curve with A7.

4.5MC TRAP ALIGNMENT

Use a 4.5MC tuned detector similar to Fig. 2. Before aligning trap, connect the detector to an accurate source of 4.5MC signal and adjust the coil slug for maximum DC voltage output. Set Contrast fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001mfd	High side to point (C). Low side to chassis.	4.5MC (400∿ 30% AM)	Any non-interfering channel	DC probe thru detector (Fig. 2) to (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station, disconnect the antenna and adjust the Fine Tuning for best picture. DO NOT readjust Fine Tuning during balance of alignment.
Connect antenna and adjust A9 for maximum sound. Connect the DC probe of a VTVM thru 10K to point (D). Common to chassis.
Using a weak station signal (with antenna disconnected), adjust A10, A11 and A12 for maximum deflection.
If necessary, retouch SLIGHTLY A10, A11 and A12 to remove intercarrier buzz or noise interference. (DO NOT CHANGE more than 1/4".)

FIG. 1

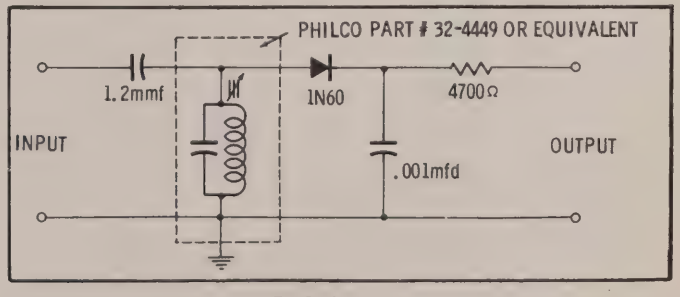


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS

76-10524-4(T-100E)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	6BC8	V202	Mixer-Osc.	6X8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	39 NPO 10%		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C202	5 ±.25mmf		NPO-SI 5	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C203	5 ±.25mmf		NPO-SI 5	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C204	5 10%	#30-1268-1						
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	3 10%		NPO-SI 3	TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C207	150		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C208	.8-3			829-3		CV-1	CT565	
C209	80 5%	#30-1268-13						
C210	2.2		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C211	39 10%		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C212	.8-3			829-3		CV-1	CT565	
C213	7.5 ±.5mmf				C10V8C		GP580	
C214	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C215	680		SI 680	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C216	150	#30-1268-6						
C217	27 N220 10%	#30-1271-3				*		10TCR-Q27
C218	3.9 10%				C10V4C			10TCC-V39
C219	27 N750 10%	#30-1268-4				CCTN-270		
C220	1 ±.1mmf		NPO-SI 1	TCZ-1			CNO-510	10TCC-V10
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	
C222	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
\# Philco Part Number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	1500Ω	
R202	10K	
R203	1800Ω 1W	
R204	10K	

ITEM No.	RATING	REMARKS
R205	470K 5%	
R206	470K 5%	
R207	220K	
R208	47K 1W	

ITEM No.	RATING	REMARKS
R209	15K	
R210	10K	
R211	68K 1W	

COILS (RF-IF)

ITEM No.	USE	PHILCO PART No.	NOTES
L201	Ant. Coil	32-4725-3	
L202	Ant. Coil	32-4725-3	
L203	IF Trap	32-4719-2	
L204	Ant. Coils	76-10554	Channel 2-13, Includes Wafer Assy.
L205	RF Choke	32-4652-52	
L206	RF Coils	76-11711	Channel 2-13, Includes Wafer Assy.

ITEM No.	USE	PHILCO PART No.	NOTES
L207	Mixer Grid Coils	76-10602	Channel 2-13, Includes Wafer Assy.
L208	Osc. Coils	76-10108	Channel 2-13, Includes Wafer Assy.
L209	Mixer Plate Coil	32-4629-13	

TV
PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6DE6
V2	2nd Video IF Amp.	6DE6
V3	3rd Video IF Amp. - Video Det.	6AM8A (6AM8)*
V4	Video Output-Sync Sep.	6AW8A
V5	Sound IF Amp. - Noise Inverter	6U8 (6U8A)* (6EA8)*
V6	Audio Detector	6CS6
V7	Audio Output	6BQ5
V8	Vert. Mult. - Vert. Output	6CS7
V9	Horiz. Mult.	6CG7
V10	Horiz. Output	6DQ6A/6DQ6 (6DQ6A)*
V11	Damper	6DA4
V12	HV Rect.	1G3GT/1B3GT
V13	LV Rect.	5U4GB

* Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	PHILCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V14	21DQP4			21DQP4	21DQP4 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲40	350	30-2590-48	AFH4-05-70	C0370	FP420.4	TMT-43	TVL-4635.7	
B	■80	350			BR2035		TD-20-350		
C	▲20	350							
D	20	350							
C2A	■20	475	30-2590-50	AFH3-156	C1120	FP399	TMS-67	TVL-1943	
B	▲100	50					TD-100-50	TVA-1310	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.22 100V		P288N-22		CUB2P22	1DP-3-224	GEM-2022	2TM-P22
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C5	3.3 NPO		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C6	.5-3	#31-6535-1		829-3		CV-1	CT565	
C7	.5-3	#31-6535-1		829-3		CV-1	CT565	
C8	1-5	#31-6535-2		829-6				
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C10	1-5	#31-6535-2		829-6				
C11	.22 100V		P288N-22		CUB2P22	1DP-3-224	GEM-2022	2TM-P22
C12	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C13	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C14	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C15	3.3 NPO 10%		NPO-DI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C16	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C17	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C19	560		DI-560	DD-561	L10T56	CCD-561	GP356	10TS-T56
C20	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C21	1000		BPD-001	DD-102	BYA10D1	CCD-105	GP210	5HK-D10
C22	5		DI-5	DD-050	L10V5	CCD-050	GP550	10TS-V50
C23	18000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C24	4700 400V 10%		V84C4D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C25	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C26	8200		DAC-26	DD-822	HVE16D8	CCD-822	UAC-280	BL-D80
C27	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C28	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C29	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C30	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C31	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C32	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C33	27 N330	#30-1263-46				*		10TCS-Q27
C34	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C35	8200		DAC-008	DD-822	HVE16D8	CCD-822	UAC-280	BL-D80
C36	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C37	.15 100V		P288N-15		CUB2P15	1DP-3-154	GEM-2015	2TM-P15
C38	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C39	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C40	.001 1000V		P1088N-001	DD-102	CUB10D1	16DP-1-102	GEM-1021	10TM-D1
C41	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C42	.0039 600V 10%		V84C6D4-10%		PM6D4	6DP-1-392	JL-239	10TS-D39
C43	47 10%		1469-000047	TCZ-47	22R5Q47	CM-19B-470K	CNO-447	MS-447
C44	390 10%		1469-00039	DD-391	5R5T39	CM-19B-391K	MCB243	MS-339
C45	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C46	8200		DAC-26	DD-822	HVE16D8	CCD-822	UAC-280	BL-D80
C47	.033 400V 10%		V84C4S33-10%		PM4S33	4DP-2-333	GEM-1613	4TM-S33
C48	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22

Philco Part No. * Not normally in distributor's stock. Available thru distributor on order to manufacturer.

TV PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CTS—IRC PART No.	MALLORY PART No.		
R1A	1.5meg	½	33-5592-32	F1-54	STY-093	U14084-8	Contrast	
B	1meg	½		B2-51	↑ QU-1145	*(	Volume	
C	Switch			KS-1			Off-On	
R2A	50K	½	33-5592-30	B-51	QU-133	TA54L	Horiz. Hold	
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	75K	½	33-5592-25	B-25	A47-75K-S	QU-135	RU753L	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	SL3500	
C	Bushing			Not Req.	Not Req.	Not Req.	SL38	
R4A	200K	½	33-5592-24	B-48	A47-200K-S	QU-139	U43	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	3meg	½	33-5592-3					Height
B	100K							Horiz. Cent (Horiz. Hold Range)
R6	3500Ω	2(WW)	33-5591-18		39-4000	112-4000	FL-4K	Vert. Lin.

† "Concentrikit" Equivalent : K-8 Kit with Base Elements & Shafts: BII-136, P17-105 (Panel) BII-137, RI-123 (Rear)

● "ETA-LOC" Equivalent: FA155L, RU15L, QR167, FSH32, U86L

T8-1 (Switch)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	12meg	
R8	8200Ω 5%	
R9	22K 5% 1W	
R10	43000Ω 5%	
R11	12meg	
R12	1000Ω	
R13	22K	
R14	1000Ω	
R15	27K	
R16	47Ω	
R17	160K	
R18	220K	
R19	22K	
R20	1000Ω	
R21	18K	
R22	330Ω	
R23	330Ω	
R24	120Ω	
R25	3300Ω	
R26	3. 9meg	
R27	560K	
R28	3. 3meg	

ITEM No.	RATING	REMARKS
R29	2. 2meg	
R30	1. 5meg	
R31	680K	
R32	1800Ω 2W	
R33	4100Ω TW	#53-1335-149
R34	18K	
R35	56Ω	
R36	10K	
R37	150K	
R38	120K	
R39	100K	
R40	22K 1W	
R41	150Ω	
R42	470Ω	
R43	1500Ω	
R44	6800Ω2W	
R45	270Ω 5%	
R46	15K	
R47	180K	
R48	100Ω	Note 1
R49	330Ω 1W	
R50	47K	

ITEM No.	RATING	REMARKS
R51	18K	
R52	1. 5meg	
R53	82K	(68K)*
R54	100Ω	
R55	1. 5meg	
R56	180Ω	
R57	180Ω	
R58	10K 1W	
R59	1000Ω	
R60	56K	
R61	680K	
R62	5600Ω 1W	
R63	56000 3W	#53-1383-39
R64	24K 4W	#53-1383-18
R65	47000 4W	#53-1335-144
R66	2200Ω	
R67	4700Ω	
R68	20000Ω TW	#53-1383-36
R69	390Ω 2W	
R70	470K	

* Alternate value. # Philco Part No. Note 1. May not be used in Run 1.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA	
K1	2nd Video If Cathode	12mmf, 6Ω	30-6039-2 ①		
K2	Audio Detector Grid	150mmf, 15K	30-6031-1	Sprague	PRC-7
K3	Sync Sep. Grid	390mmf, 3300mmf, 220K, 330K, 1meg, 1. 5meg	30-6532-3		
K4	Vert. Integrator	150mmf, 4000mmf, 6000mmf, 5000mmf, 33K, 33K, 90K	30-6030-3	Sprague	V10
K5	Vert. Feedback	1000mmf, 2200mmf, 47K, 100K	30-6500-4		
K6	Horiz. AFC	82mmf, 220mmf, 1000mmf, .047mfd (50V), 82K, 150K, 680K, 1. 2meg	30-6035-2		
K7	Horiz. Mult. Circuit	390mmf, 820mmf, 3300mmf, 4700Ω, 6800Ω, 39K	30-6531-2		

① Run 1 uses 15mmf, 68Ω (Part #30-6039-1).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rem PART No	
L1	47. 25MC Trap Coil	32-4645-32	19-1001	19-1001	BC-562	4604		1. 5uh
L2	47. 25MC Trap Coil	32-4645-19	19-1002	19-1002	BC-563	4603		3. 0uh
L3	41. 25MC Trap Coil	32-4645-34						3uh
L4	RF Choke	32-4645-41				4584		2. 2uh
L5	1st Video IF	32-4645-36	19-3001	19-3001	TV-189	6176		. 68uh
L6	2nd Video IF	32-4686-22						
L7	3rd Video IF	32-4686-2						
L8	4th Video IF	32-4686-3						
L9	Resonant Choke	32-4674-1						22uh
L10	Resonant Choke	32-4645-7						3uh
L11	Shunt Peaking Coil	32-4782-8	19-4301	19-4301	TV-197	6154		220uh
L12A	Sound Take-Off .	32-4686-9						
B	4. 5MC Trap							
L13	Shunt Peaking Coil	32-4782-8	19-4201	19-4201	TV-197	6154		220uh
L14	Series Peaking Coil	32-4782-10	19-3330	19-3330	TV-200	6132		330uh
L15	Sound IF	32-4745-2						
L16	Quadrature Coil	32-4844-20						
L17	RF Choke	32-4124-82	19-1005	19-1005	BC-566	4613		8uh
L18	RF Choke	33-4631-2	19-6023		TV193	4636		23uh, Note 1
L19	Fil. Choke	33-4645-40						

Note 1. Wound on a 22Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO [illegible] No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Rem PART No.	Thordarson PART No.	
L20	150Ω		32-4754-3						Horiz. Stabilizer

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT (1000 ∿)	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No
L21	. 260A	40Ω	1 Hy.	32-5710-8						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No
T1	117V ② 2A	540VCT ② .280A	5V ② 3A	32-8807-5				P-8386		R-7EBA
	SEC. ③	SEC. 4	SEC. 5							
	6. 3V ② 8A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							
		PHILCO PART No.	Halldorson PART No	Merit PART No.	Rem PART No	Rogers PART No	Stancor PART No	Thordarson PART No	Tried PART No
T2	Vert. Output	32-8904-1	26875 ①	A-3815 ①	V308	VO33	A-8143	26875 ①	A-107X ②
T3	Yoke-Horiz. (21MH) (90°)-Vert. (49MH) Centering Device & Clamp Assembly	76-11019-2							
T4	Horiz. Output	32-8903-1							

① Use 12: 1 turns ratio. ② Drill new mounting hole(s).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	
T5	4200Ω	3-4Ω	32-8747-4	24248	A-3026	AU-801	A-3877	24248	S-3X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	36-1651-26	8A2L	Models H4672, L, W, UH4672, L, W, H4673R, LR, UH4673R, LR
	5 1/4"	PM		36-1629-9		Models H4248E, UH4248E, H4668M, L, LR, R, UH4668L, M
				36-1671-3		Models H4250, L, UH4250, L
				36-1673-6		Models H4670, L, W, UH4670, L, W
	8"	PM		36-1680-4		Models H4670, L, W, UH4670, L, W

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	PHILCO PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1		34-8037 †	SD-81 *	E1618 †			†Dual Selenium Diode *Silicon, 2 required

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	F	7/10A S/B 250V	27-6318-1	27-6317-6	333, 600 (F 7/10A 250V S/B)	344010	F 7/10	HF 1/2 to 3/4
M3	½" Length of #26 wire							

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4	Tuner	T-100E	VHF
	Tuner	T-101E	VHF with UHF Provisions
	Tuner	T-38D	UHF
M5	Switch	42-2075-1	Range (Normal-Strong) SPDT Slide Type
M6	Switch	42-2075-1	Horiz. SPDT Slide Type
	Magnet	76-8077-7	Focus
	Printed Board	54-6993	Video IF Panel
	Printed Board	54-6994-1	Main, Run 1
	Printed Board	54-6994-3	Main, Run 2

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	54-9213-81	Models H4248E, H4250, L, UH4248E, UH4250, L
Safety Glass	54-9213-89	Models H4670, L, W, H4672, L, W, UH4670, L, W, UH4672, L, W
Safety Glass	54-9213-89	Models H4668L, M, UH4668L, M
Mask	54-9295-5	Models H4248E, UH4248E
Mask	54-9295-6	Models H4250, L, UH4250, L
Mask	54-9296-4	Models H4672, UH4672
Mask	54-9296-1	Models H4672L, W, UH4672L, W
Mask	54-9296-3	Models H-4668L, M, UH4668L, M
Knob	76-1143-19	Channel Selector, Models H4248E, H4250, L, H4670, L, W, H4672, L, W, H4668L, M
Knob	76-1143-20	Channel Selector, Models UH4248E, UH4250, L, UH4670, L, W, UH4672, L, W, UH4668L, M
Knob	76-1141-2L	UHF Channel Selector, Models UH4248E, UH4250, L, UH4670, L, W, UH4672, L, W, UH4668L, M
Knob	54-5534-1	Fine Tuning
Knob	54-5481-6	Off-On-Volume
Knob	54-5405-3	Brightness, Vert. Hold, Horiz. Hold
Knob	54-5532-1	Contrast
Cabinet Leg	434-0029-8	H4668L, M, UH4668L, M

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8868 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) - 4 Conductor 8465 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

REMOTE CONTROL RECEIVER

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	USE	TYPE	ITEM No	USE	TYPE
	• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •				
V15	Preamp.	6AU6	V19	Discriminator-Channel Sel. Relay Control	6BJ8
V16	1st Amp.	6AU6	V20	Off-On Relay Control- Sound Relay Control	12BH7A
V17	2nd Amp.	6AU6	V21	Rectifier	6CA4
V18	Limiter Tripler	6CB6			

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						NOTES
	CAP	VOLT	PHILCO PART No	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C49A	●20	350	30-2590-51	AFH3-35	CO350	FP378.3	TMD-47 TD-20-350	TVL-3779	
B	10	350							
C	●10	350							
C50	5	50	30-2417-29	PRE310	BBR5-50	TC50	TD-5-50	TVA-1303	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA				
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No	MALLORY PART No	SPRAGUE PART No
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C52	33 10%		DK-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C53	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C54	470 10%		1469-00047	DD-471	SR5T47	CM-19B-471K	MCB345	MS-347
C55	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP168	10TS-T68
C56	10		DK-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C57	8200		DAC-26	DD-823	BYE10D6	CCD-823	UAC-280	BL-D80
C58	10		DK-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C59	8200		DAC-26	DD-823	BYE10D6	CCD-823	UAC-280	BL-D80
C60	390 10%		1469-00039	DD-391	SR5T39	CM-19B-391K	MCB343	MS-339
C61	8200		DAC-26	DD-823	BYE10D6	CCD-823	UAC-280	BL-D80
C62	8200		DAC-26	DD-823	BYE10D6	CCD-823	UAC-280	BL-D80
C63	180 10%		1469-00018	DD-181	22RST18	CM-19B-181K	CMO-318	MS-318
C64	100 10%		1469-0001	DD-101	22RST1	CM-19B-101K	MCB256	MS-310
C65	180 10%		1469-00018	DD-181	22RST18	CM-19B-181K	CMO-318	MS-318
C66	15		DK-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C67	1000		BPD-001	DD-102	BYA10Z1	CCD-102	GP210	5HK-D1
C68	1000		BPD-001	DD-102	BYA10Z1	CCD-102	GP210	5HK-D10
C69	50000		BPD-05	DD-503	S-05S50	1DP-3-503	GP150	5HK-S50
C70	50000		BPD-05	DD-503	S-05S50	1DP-3-503	GP150	5HK-S50
C71	.15 100V		P3BSN-15		CUB3P15	1DP-3-154	GEM-3015	XTM-P15

PHILCO CHASSIS 10L31, 10L31U, 10L32, 10L32U

FOLDER 1

REMOTE CONTROL RECEIVER
PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R71	2.2meg	
R72	470K	
R73	68K	
R74	3300Ω	
R75	150Ω	
R76	1.5meg	
R77	150K 1W	
R78	390K	
R79	1.2meg	

ITEM No.	RATING	REMARKS
R80	2200Ω 1W	
R81	68K 1W	
R82	120K	
R83	1meg	
R84	82K	
R85	100Ω	
R86	47K	
R87	2.2meg	
R88	2.2meg	

ITEM No.	RATING	REMARKS
R89	2.2meg	
R90	2.2meg	
R91	1meg	
R92	3.3meg	
R93	1meg	
R94	2000Ω 3W	(1000Ω 2W)*
R95	27K	
R96	2700Ω	Note 1.

*Alternate Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L22	Amp. Output Coil	32-4782-1						
L23	39KC Interstage Trans.	32-4778-1						
L24	Discriminator Primary	32-4779-1						
L25	Discriminator Secondary	32-4779-2						

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA						
	PRI.	SEC. 1	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T6	117V @ .66A	250V @ .070A tap @ 18V @ .001A tap @ 6.3V @ 2.9A	32-8896-2						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M7		1½" length of #26 wire						

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M8	1N60	34-8022-3	1N60	1N60	1N60	Bias Rect. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M9	Relay	42-4038-1	Channel Selector
M10	Relay	42-4039-1	Sound
M11	Relay	42-4039-1	Off-On (TV Chassis)
	Printed Board	54-5468	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
	Transducer Assy.	36-1686	Includes Electrostatic Speaker

REMOTE CONTROL TRANSMITTER
PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	PHILCO PART No.	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	34-6001-25	Oscillator (T1605)					PNP

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C72	8200		DAC-26	DD-822	HVE16D8	CCD-822	UAC-280	BL-D80
C73	560 10%	(470mmf)*	1469-00056	DD-561	IR5T56	CM-19B-561K	MCJ247	MS-356
C74	8200		DAC-26	DD-822	HVE16D8	CCD-822	UAC-280	BL-D80
C75	150mmf Max.	#13-6534-6				424		
C76	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33

Philco Part No. *Alternate

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R97	10K	

ITEM No.	RATING	REMARKS
R98	100K	

ITEM No.	RATING	REMARKS

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L26	Osc. Coil	32-4781-1						

RECTIFIERS

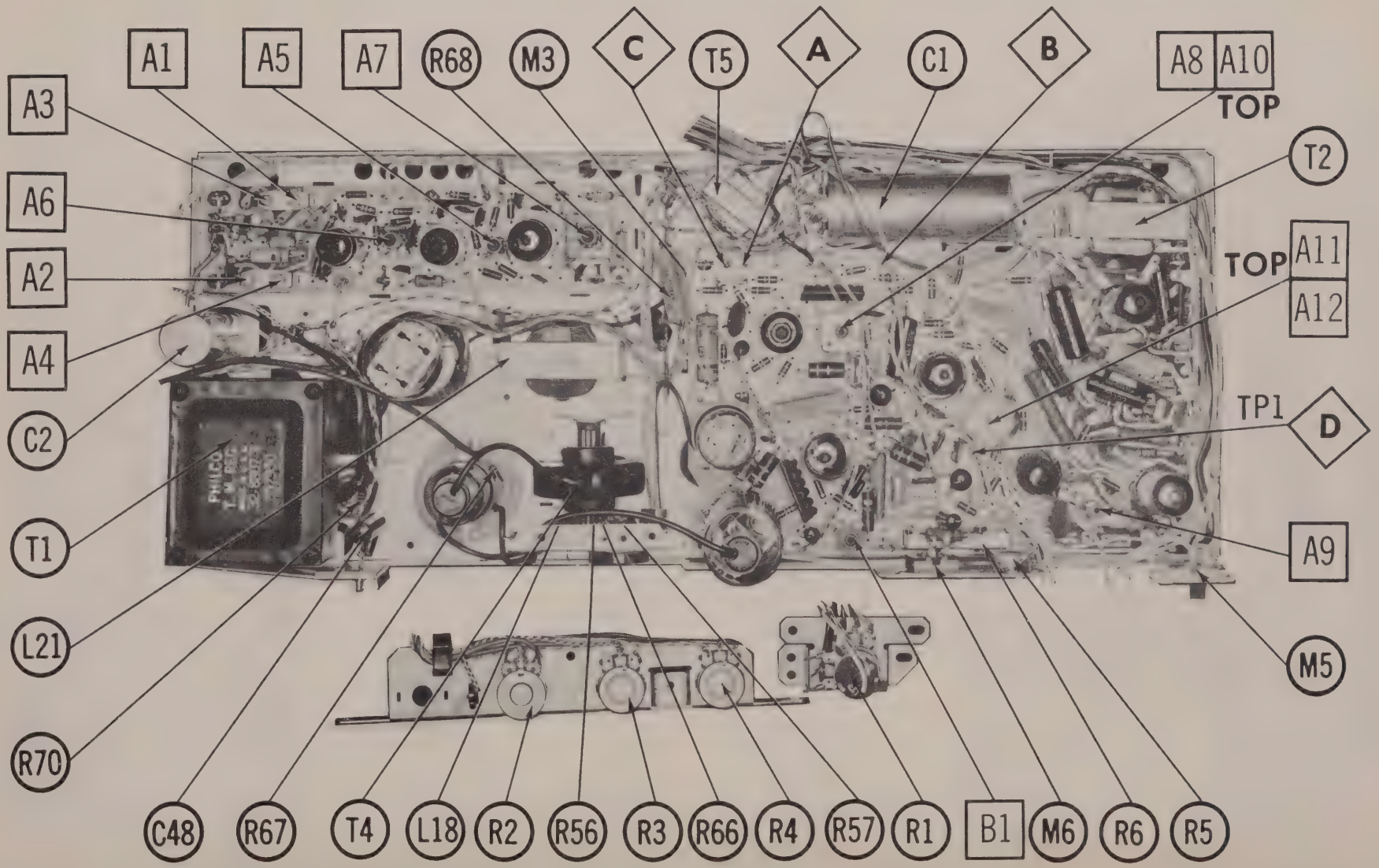
ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	PHILCO PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M12		34-8050-1					Silicon Type

BATTERIES

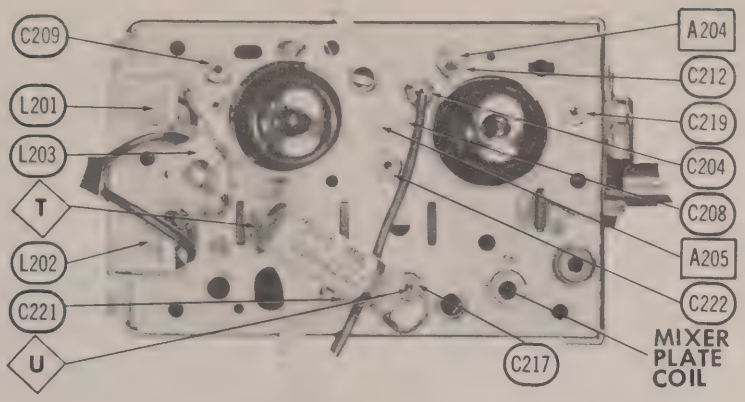
ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M13	1.1V	P640						RM640R	Mercury Type, 4 Required

MISCELLANEOUS

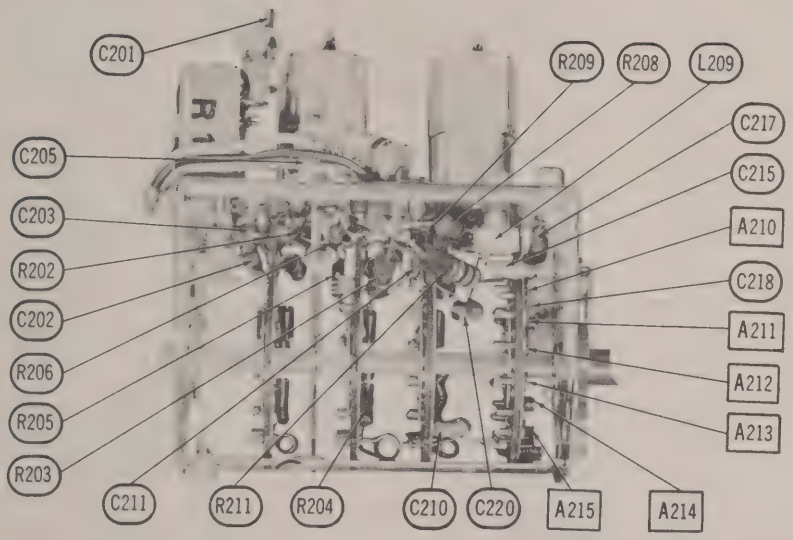
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M14A	Switch	28-13026	Spring Contact Type (Upper)
B	Switch	28-13033	Spring Contact Type (Lower)
M15	Switch	28-13026	Channel Selector
	Transducer Assy.	36-1686	Includes Electrostatic Speaker
	Printed Board	54-5469	



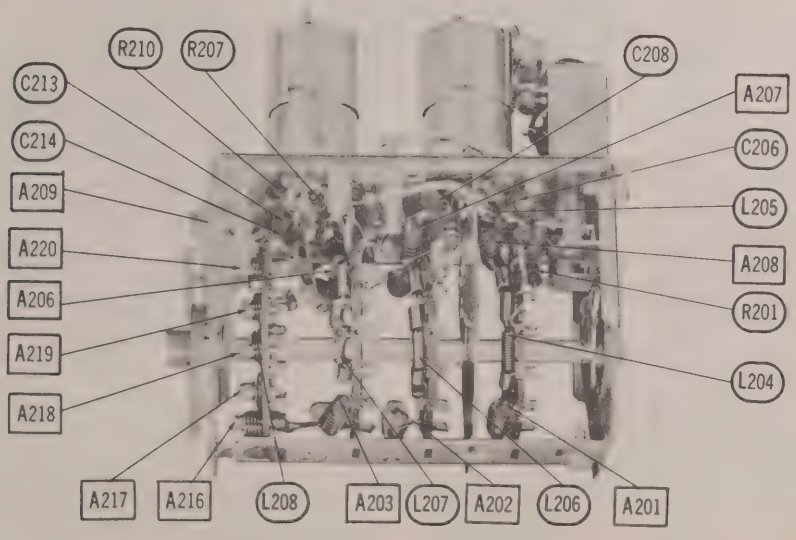
TV CHASSIS — TOP VIEW



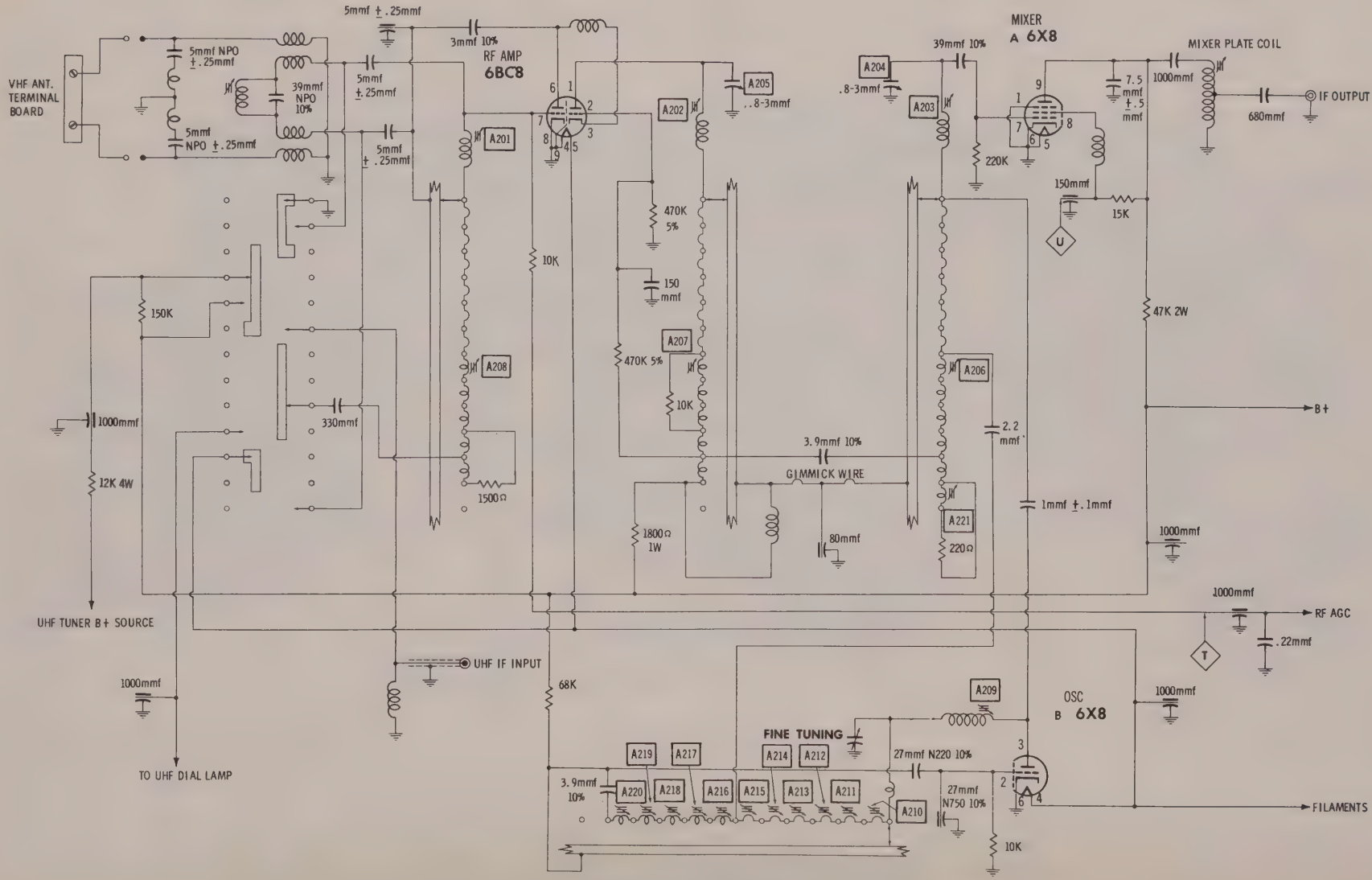
TUNER 76-10524-4 (T-100E) — TOP VIEW



TUNER 76-10524-4 (T-100E) — LEFT SIDE



TUNER 76-10524-4 (T-100E) — RIGHT SIDE



CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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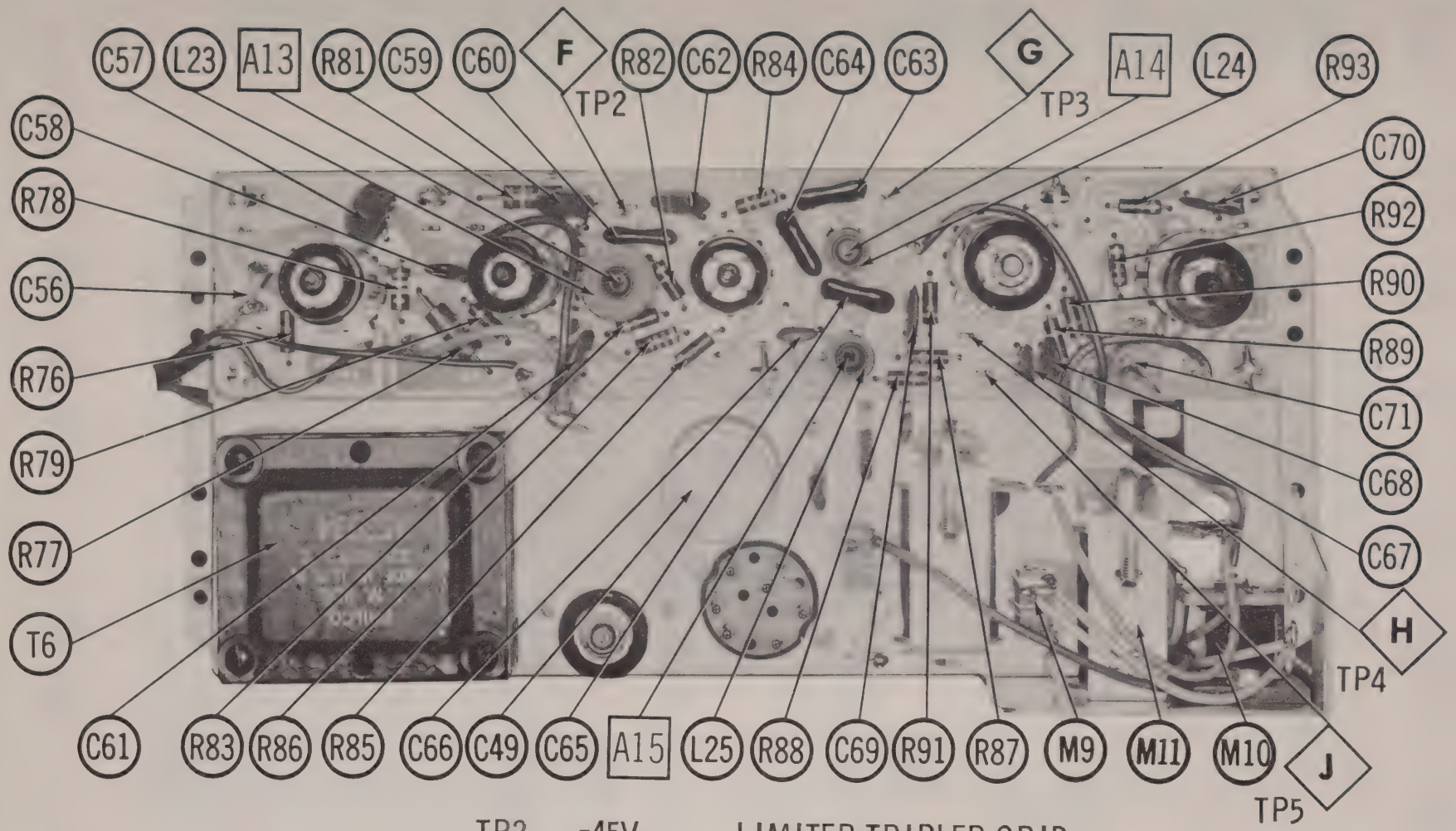
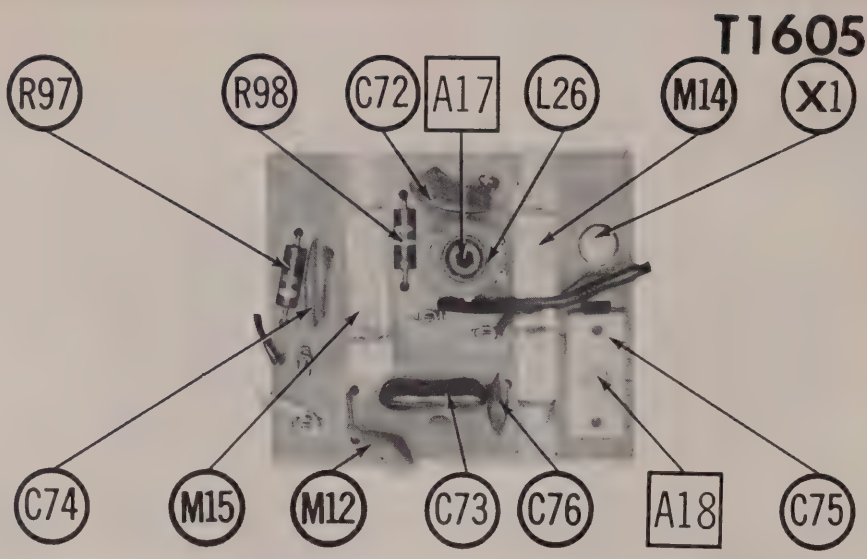
VHF TUNER WITH UHF PROVISIONS 76-10525-4 (T-101E)

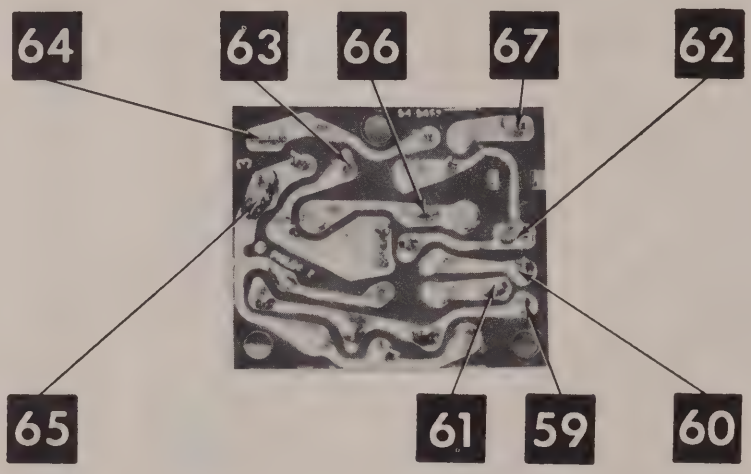


TP2	-45V	LIMITER TRIPLER GRID
TP3	215V	LIMITER TRIPLER PLATE
TP4	-64V	DISC CATH (PIN 2)
TP5	4V	DISC CATH (PIN 3)

REMOTE CONTROL RECEIVER — TOP VIEW

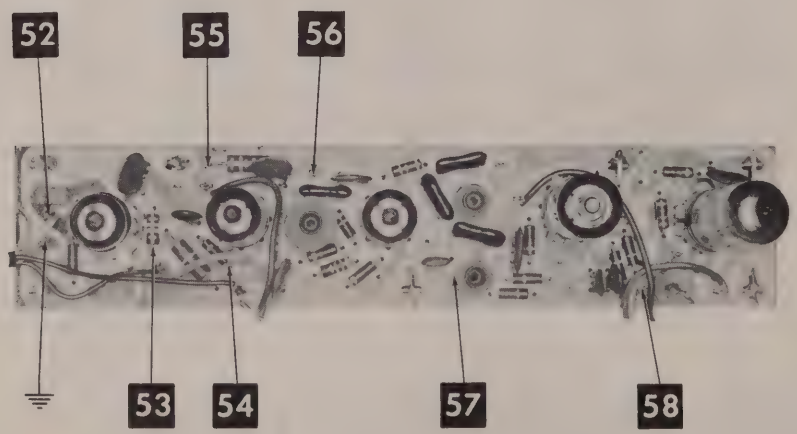


REMOTE CONTROL TRANSMITTER PRINTED BOARD – TOP VIEW

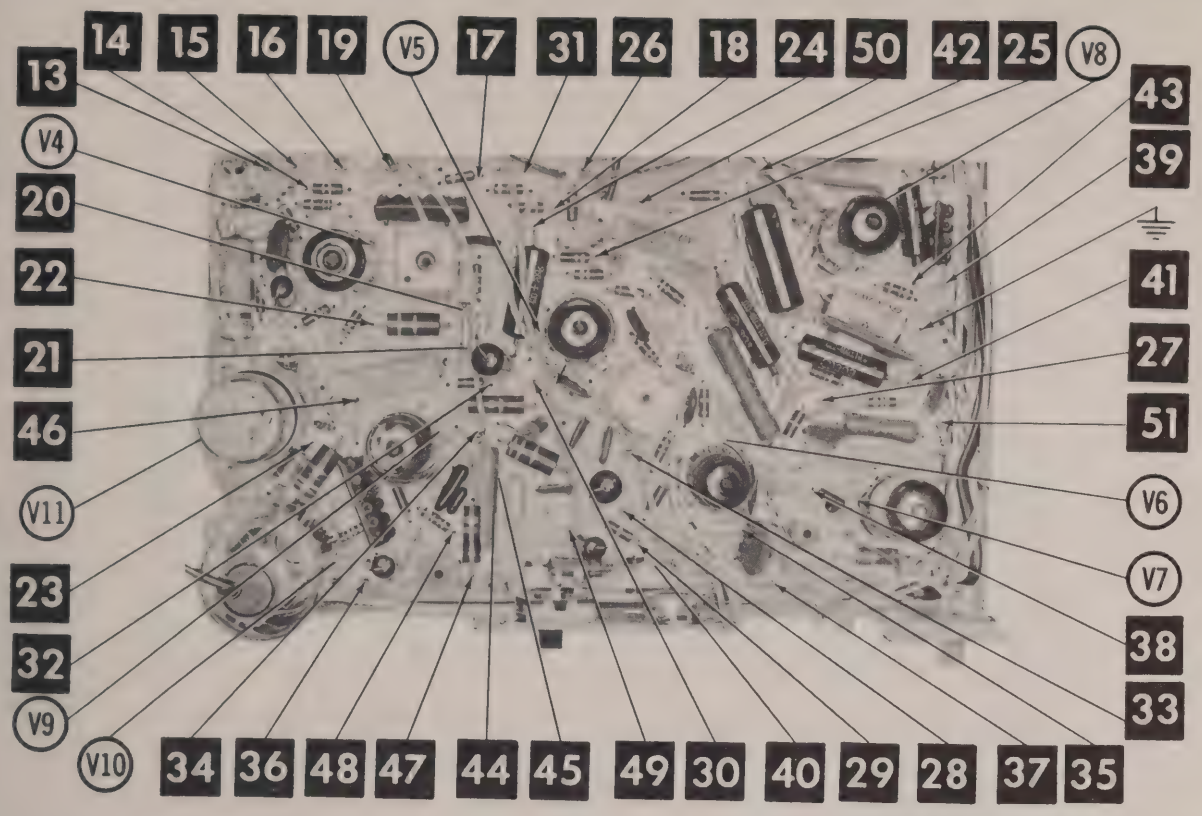


A Howard W. Sams CIRCUITRACE® Photo

REMOTE CONTROL TRANSMITTER PRINTED BOARD – BOTTOM VIEW



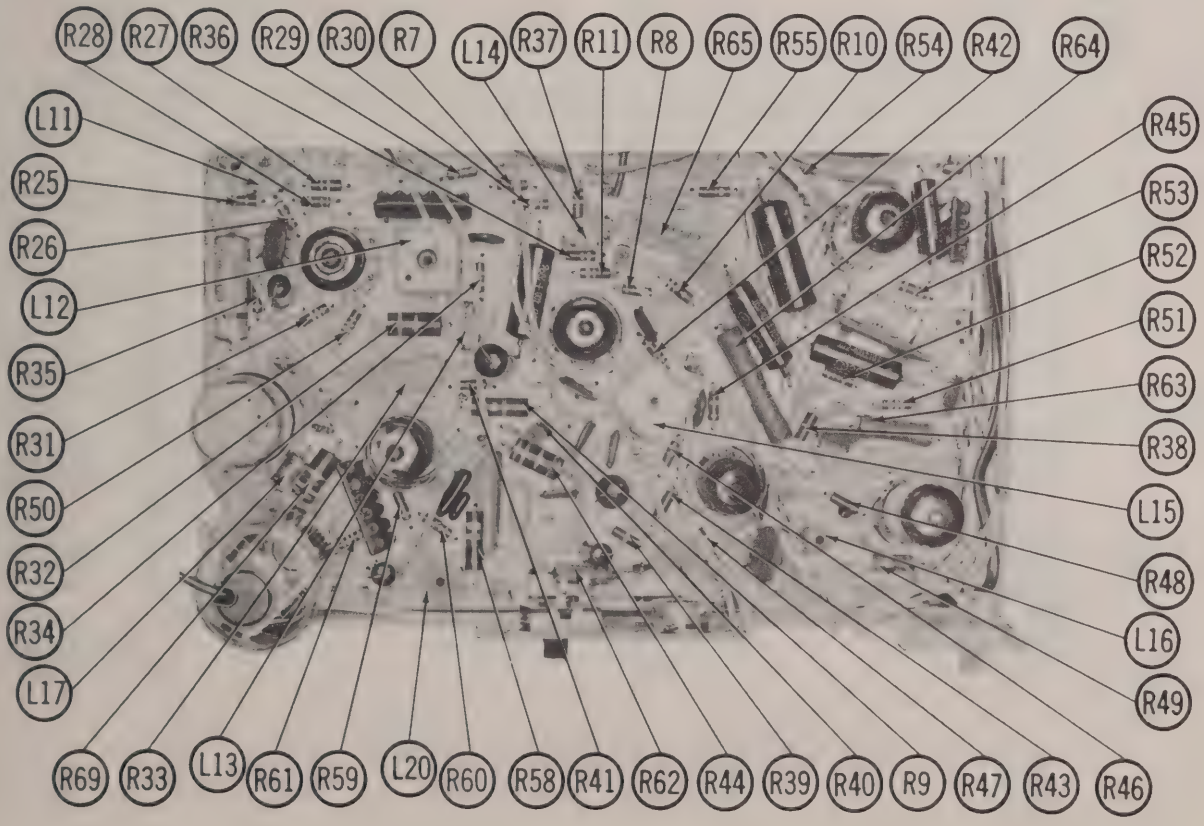
REMOTE CONTROL RECEIVER PRINTED BOARD – TOP VIEW



A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TV MAIN PRINTED BOARD



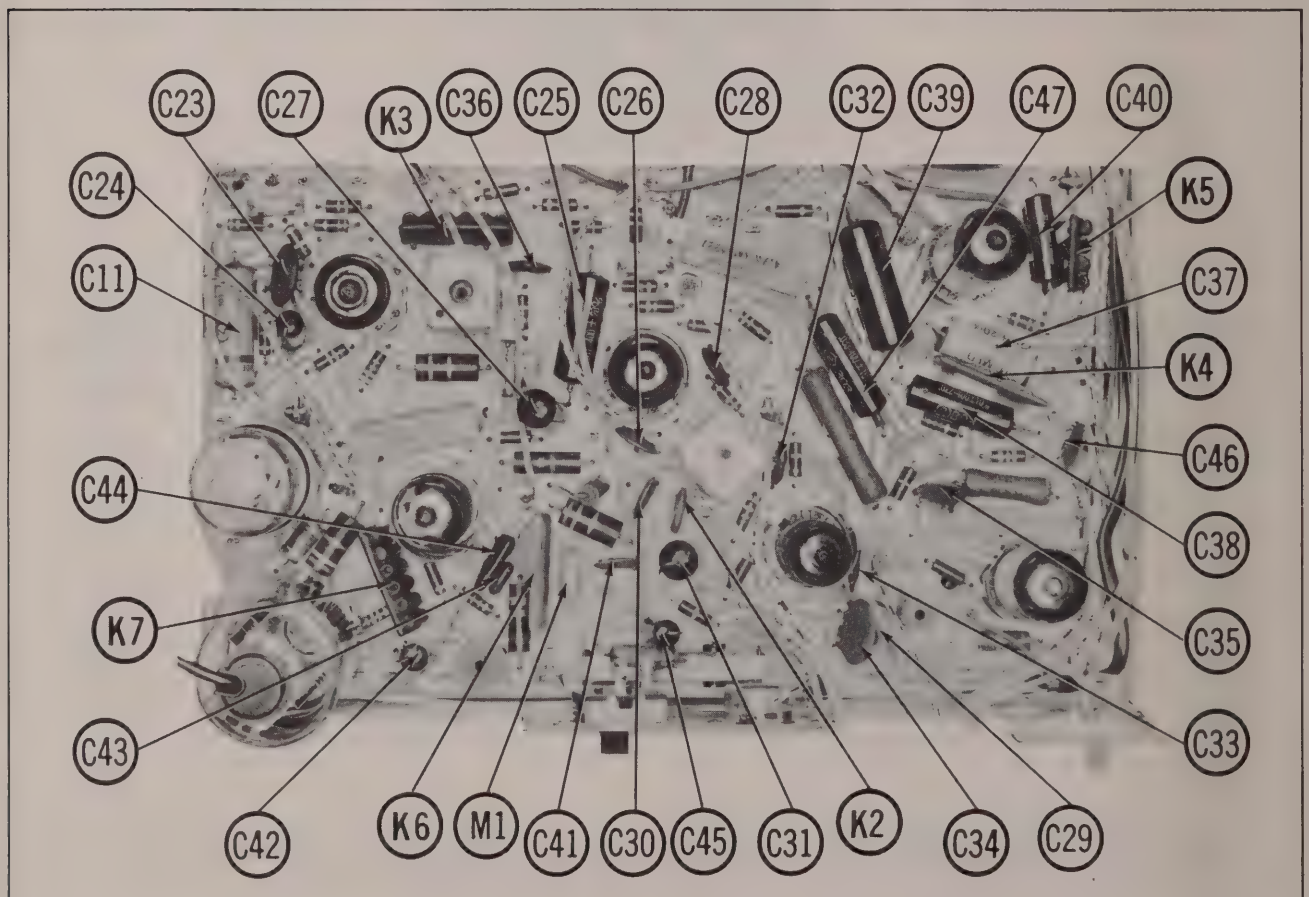
TV MAIN PRINTED BOARD — RESISTOR & INDUCTOR IDENT.

TV RESISTANCE MEASUREMENTS

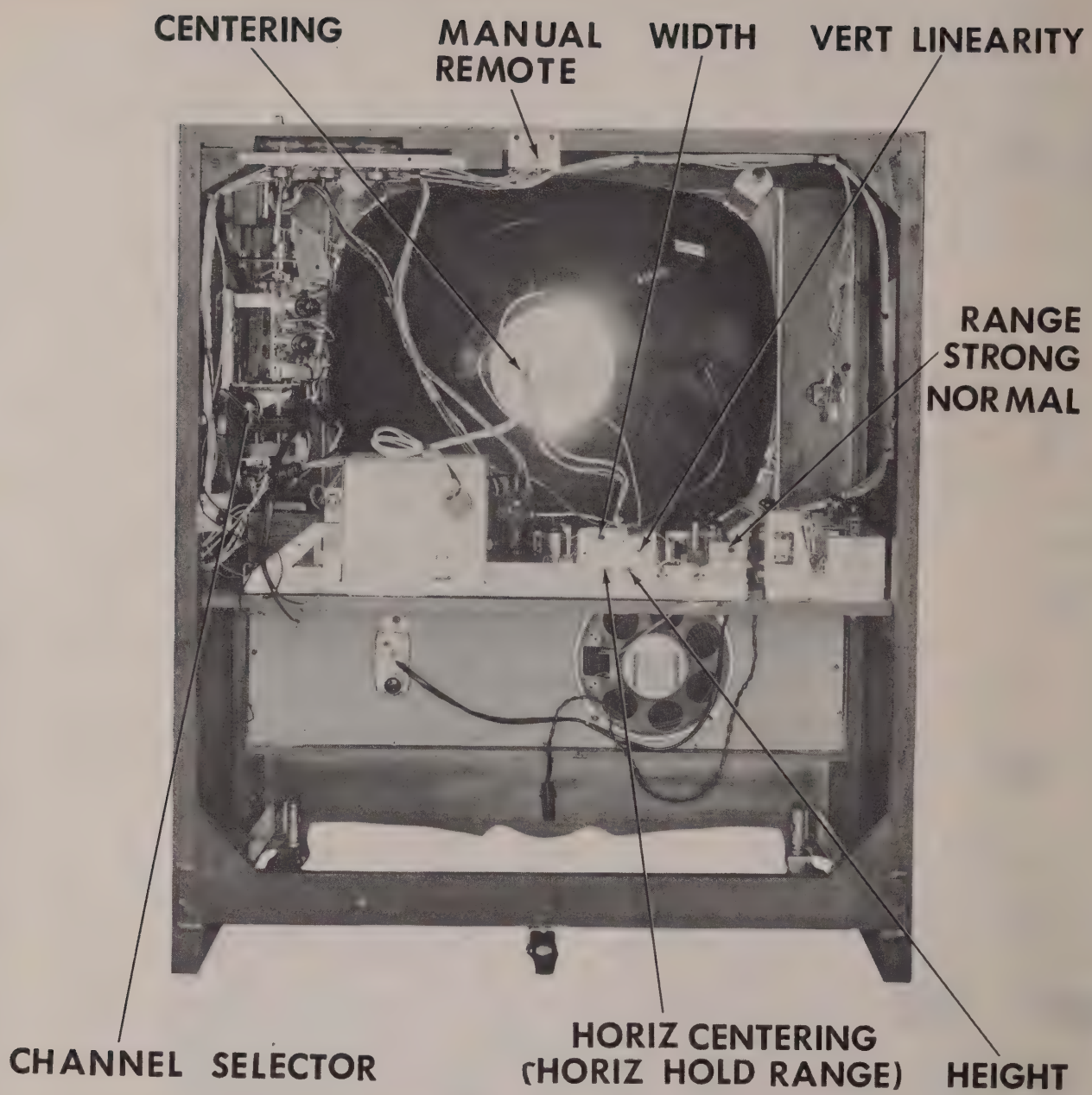
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DE6	1.3meg	47Ω	0Ω	.1Ω	▲ 1000Ω	▲ 1000Ω	0Ω		
V2	6DE6	100K	▲ 68Ω	.1Ω	0Ω	† 1400Ω	† 1400Ω	120K		
V3	6AM8A	120Ω	.2Ω	† 3600Ω	.1Ω	0Ω	† 3600Ω	.2Ω	3300Ω	0Ω
V4	6AW8A	0Ω	1meg	† 40K	0Ω	.1Ω	56Ω	680K	† 3000Ω	† 5900Ω
V5	6U8	† 24K	6Ω	† 25K	.1Ω	0Ω	† 25K	470Ω	† 4300Ω	2meg
V6	6CS6	15K	270Ω	0Ω	.1Ω	† 180K	† 9000Ω	3.3Ω		
V7	6BQ5	100Ω	100Ω	330Ω	.1Ω	0Ω	NC	† 310Ω	NC	† 0Ω
V8	6CS7	‡ 5700Ω	NC	1.5meg	.1Ω	0Ω	● ‡ 3.5meg	100K	● 120K	● 1400Ω
V9	6CG7	† 10K	2meg	1000Ω	.1Ω	0Ω	† 46K	● 120K	1000Ω	0Ω
V10	6DQ6A/ 6DQ6	NC	.1Ω	TP	† 5600Ω	680K	TP	0Ω	0Ω	TOP CAP ‡ 35Ω
V11	6DA4	NC	NC	¶ 100K	NC	† 1.4Ω	NC	.1Ω	0Ω	
V12	1G3GT/ 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡ 365Ω
V13	5U4GB	NC	¶	NC	36Ω	NC	40Ω	NC	¶	
V14	21DQP4	0Ω	11.5Ω	Pin 6 ‡ 100K	Pin 10 † 100K	Pin 11 ●170K	Pin 12 .1Ω			
V201	6BC8	† 2200Ω	280K	INF	.1Ω	0Ω	INF	1.5meg	0Ω	0Ω
V202	6X8	0Ω	10K	† 68K	0Ω	.1Ω	0Ω	220K	† 62K	† 47K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM 240V SOURCE.
‡ MEASURED FROM PIN 3 OF V11.

NC NO CONNECTION
TP TIE POINT



TV MAIN PRINTED BOARD-CAPACITOR & MISC IDENT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a station signal. Allow the receiver to warm up. Connect a clip lead across the Horizontal Stabilizing coil (L20).

Set the Horizontal Hold (R2) to the center of its range.

Adjust the Horizontal Centering control (R5B) until the picture appears to float back and forth across the screen.

Remove the Clip lead and adjust the Horizontal Stabilizing Coil slug (B1) until the picture synchronizes horizontally.

PHOTOFACT® Folder

SETCHELL-CARLSON
MODEL P66 (Ch. C106)

SETCHELL-CARLSON
MODEL P66 (Ch. C106)

MODEL P66 (Ch. C106)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 479 FOLDER 2

PHOTOFACT® Folder

SETCHELL-CARLSON
MODEL P66 (Ch. C106)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from top of cabinet. Remove control escutcheon.
2. Remove 4 metal screws holding rear cover. Remove 2 metal screws holding antenna terminal strip. Remove rear cover.
3. Remove HV lead, picture tube socket and yoke plug.
4. Remove 1 chassis screw from the left bottom of cabinet.
5. Pull left side of chassis out slightly, then remove chassis.

MODEL P66 (Ch. C106)

TRADE NAME	Setchell-Carlson Model P66 (Ch. C106, C106 Revised).
MANUFACTURER	Setchell-Carlson Inc., New Brighton, Minn.
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 130 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 6 metal screws holding mask. Pull mask and glass straight out to remove.

FUSE

A fuse is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove Channel Selector, Fine Tuning, Volume and Contrast knobs, and control escutcheon.

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust the horizontal hold until picture synchronizes horizontally.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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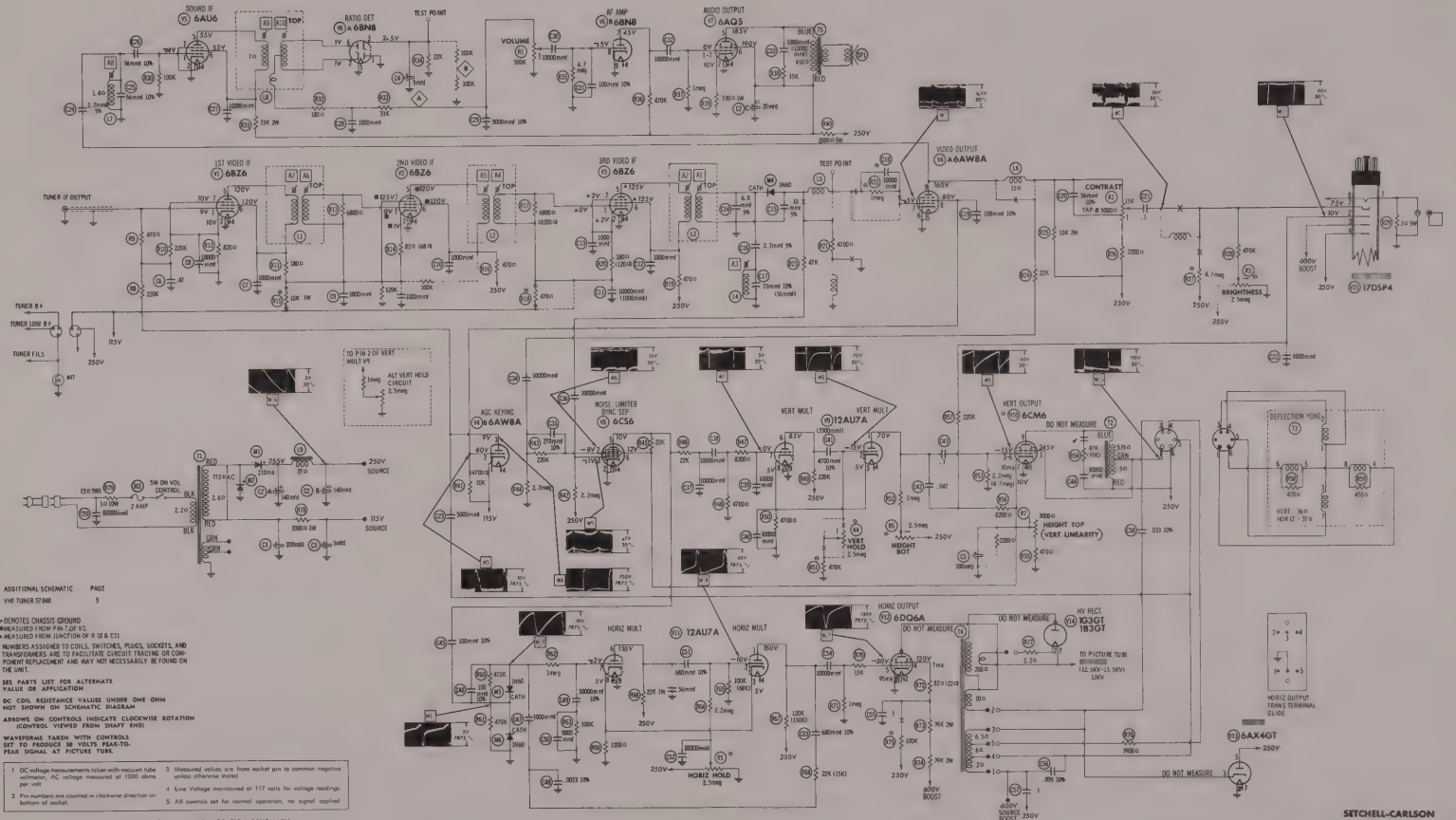
JA788

SET 479 FOLDER 2



ADDITIONAL SCHEMATIC PAGE
VHF TUNER 57 B48 5

+DENOTES CHASSIS GROUND
#MEASURED FROM PIN 7 OF V2.
+MEASURED FROM JUNCTION OF R 18 & C11

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket.
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied

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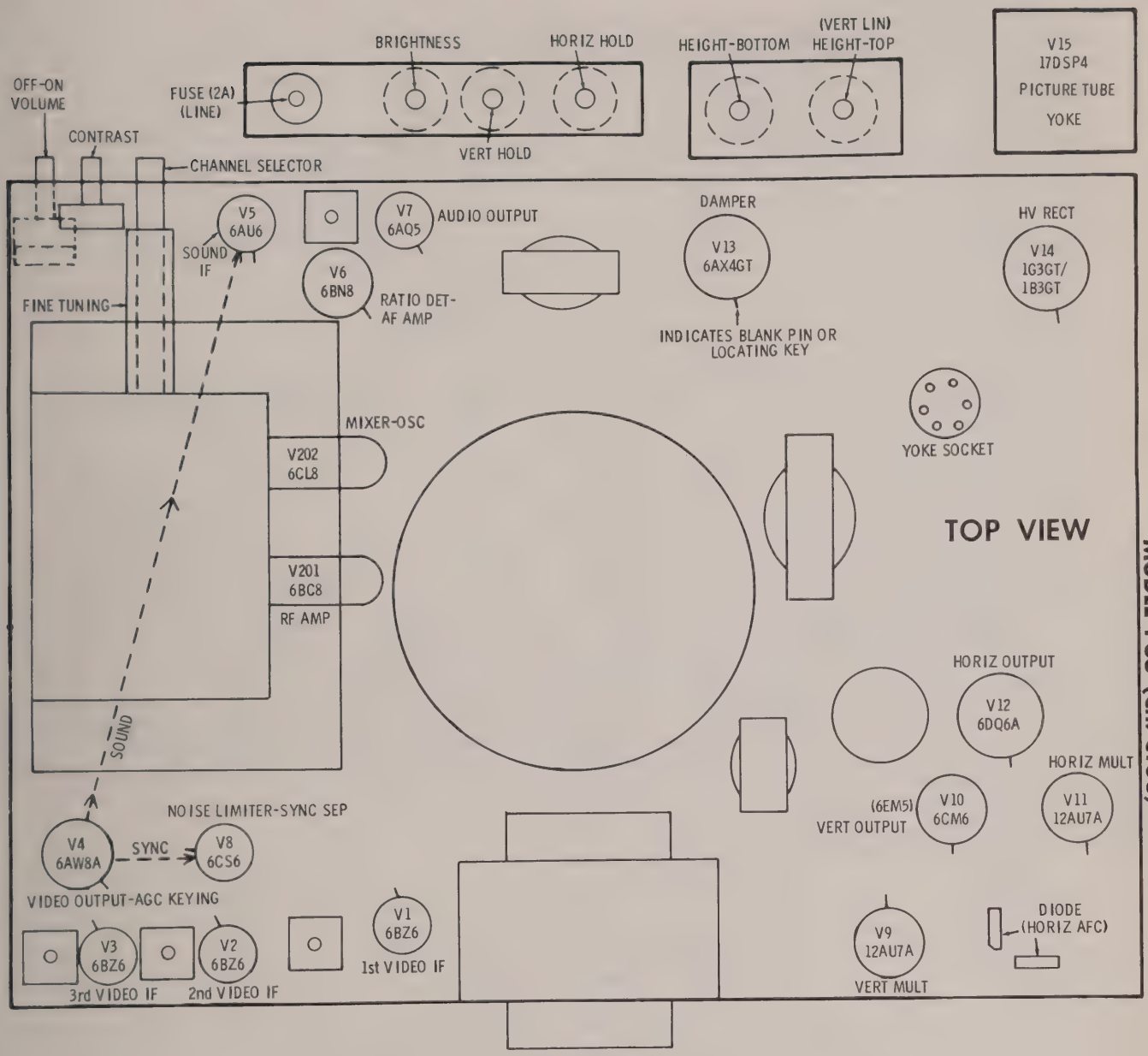
SETCHELL-CARLSON
MODEL P66 (Ch. C106)

TUBE PLACEMENT CHART



SETCHELL-CARLSON
MODEL P66 (Ch. C106)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), Rect. (B+)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, Rect. (B+)
Vert. off freq. V9
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V8
No horiz. sync V8
No vert. or horiz. sync V8

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to pin 1 (grid) of 3rd Video IF. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to TP-1. Low side to chassis.	A1, A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A3 to place 41.25MC marker in trap notch.
2.	High side thru .001mfd to pin 1 (grid) of 2nd Video IF. Low side to chassis.	"	"	"	"	A4, A5	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
3.	High side thru .001mfd to pin 1 (grid) of 1st Video IF. Low side to chassis.	"	"	"	"	A6, A7	"
4.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	"	"	"	Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Repeat steps 1 thru 4 if necessary.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from TP-2 to chassis. The junction of these two resistor is alignment point (B) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .001mfd to TP-1. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to TP-2. Common to chassis.	A8, A9	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (A). Common to point (B).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

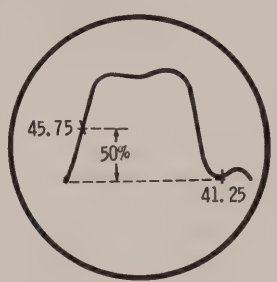
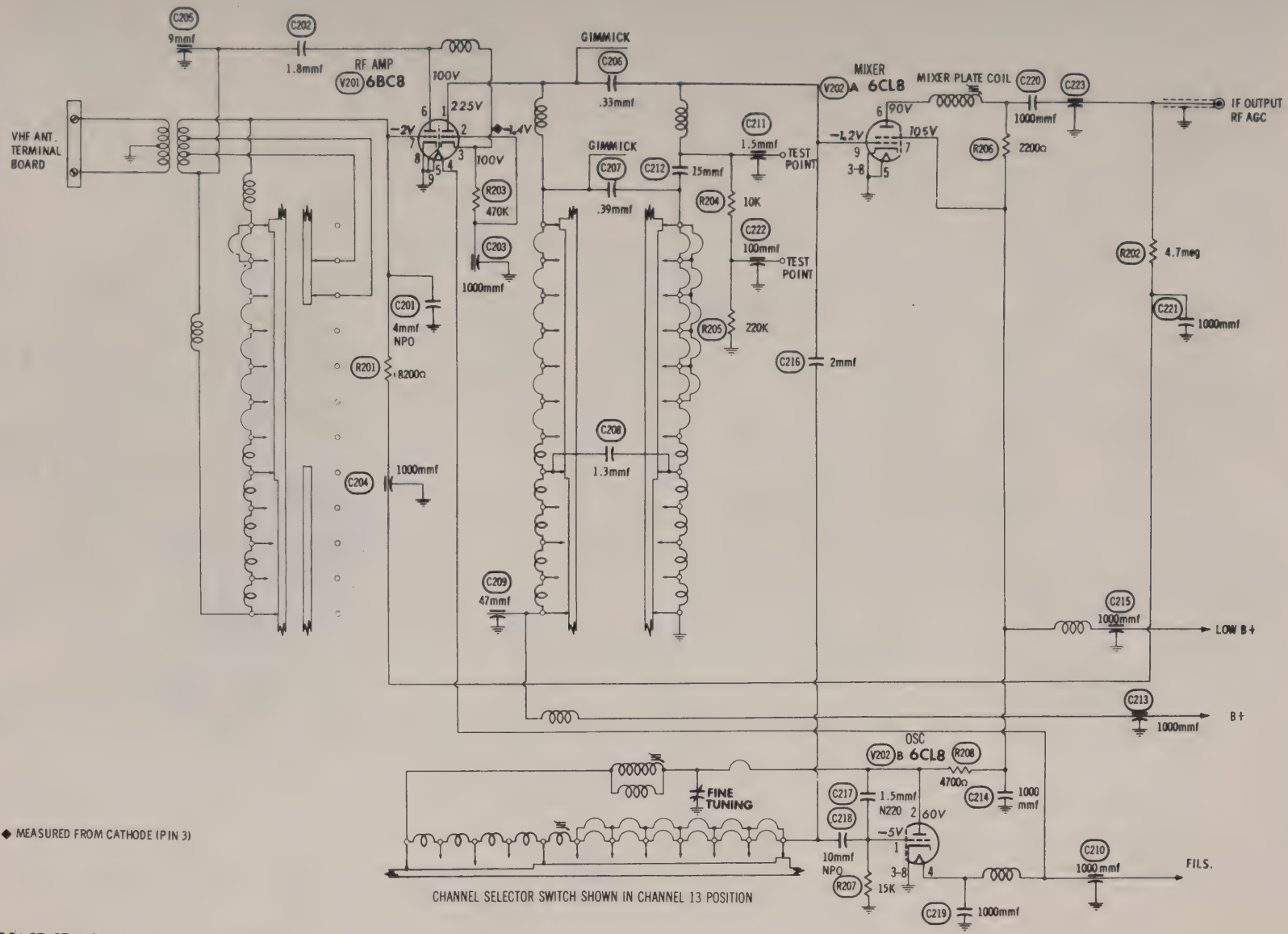


FIG.1



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER # 57B48

SETCHELL-CARLSON MODEL P66 (Ch. C106)

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V201	RF Amplifier	6BC8

ITEM No.	USE	TYPE
V202	Mixer-Osc.	6CL8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	4 NPO				C10V4C			10TCC-V39
C202	1.8				C10V2C			10TCC-V18
C203	1000		EF-001	MFT-1000		CCF-102	CT280A	
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	9		NPO-DI 10	DTZ-10	C10V9C	CCTO-100	CNO-410	10TCC-Q10
C206	.33							
C207	.39							
C208	1.3		NPO-DI 1.5	DTZ-1.5	C10V15C		CNO-515	10TCC-V12
C209	47		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C210	1000		EF-001	MFT-1000		CCF-102	CT280A	
C211	1.5		NPO-DI 1.5	DTZ-1.5	C10V15C		CNO-515	10TCC-V15
C212	15		DI-15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	2		NPO-DI 2.2	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C217	1.5 N220							
C218	10 NPO		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C219	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C220	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C221	10000		DI-10000	DD-103	BYA10S1	CCD-103	GP110	10TS-S10
C222	100		EF-0001	MFT-100				
C223								

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	8200Ω	
R202	4.7meg	
R203	470K	

ITEM No.	RATING	REMARKS
R204	10K	
R205	220K	
R206	2200Ω	

ITEM No.	RATING	REMARKS
R207	15K	
R208	4700Ω	

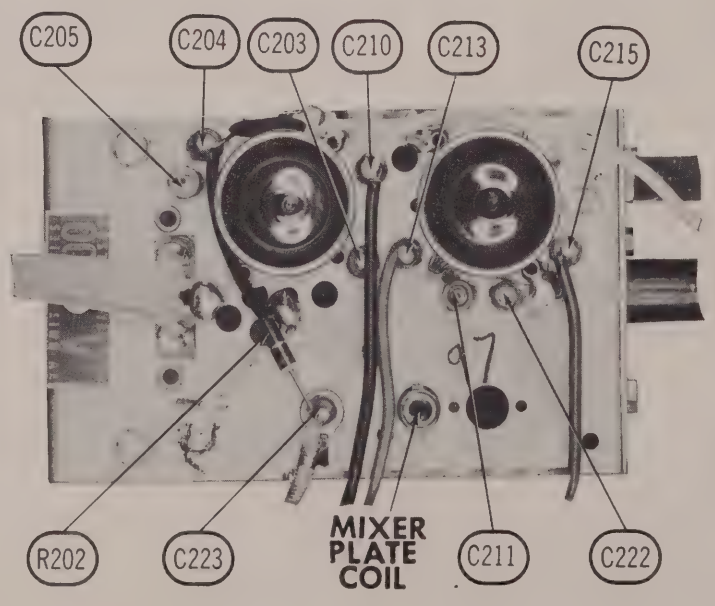
TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

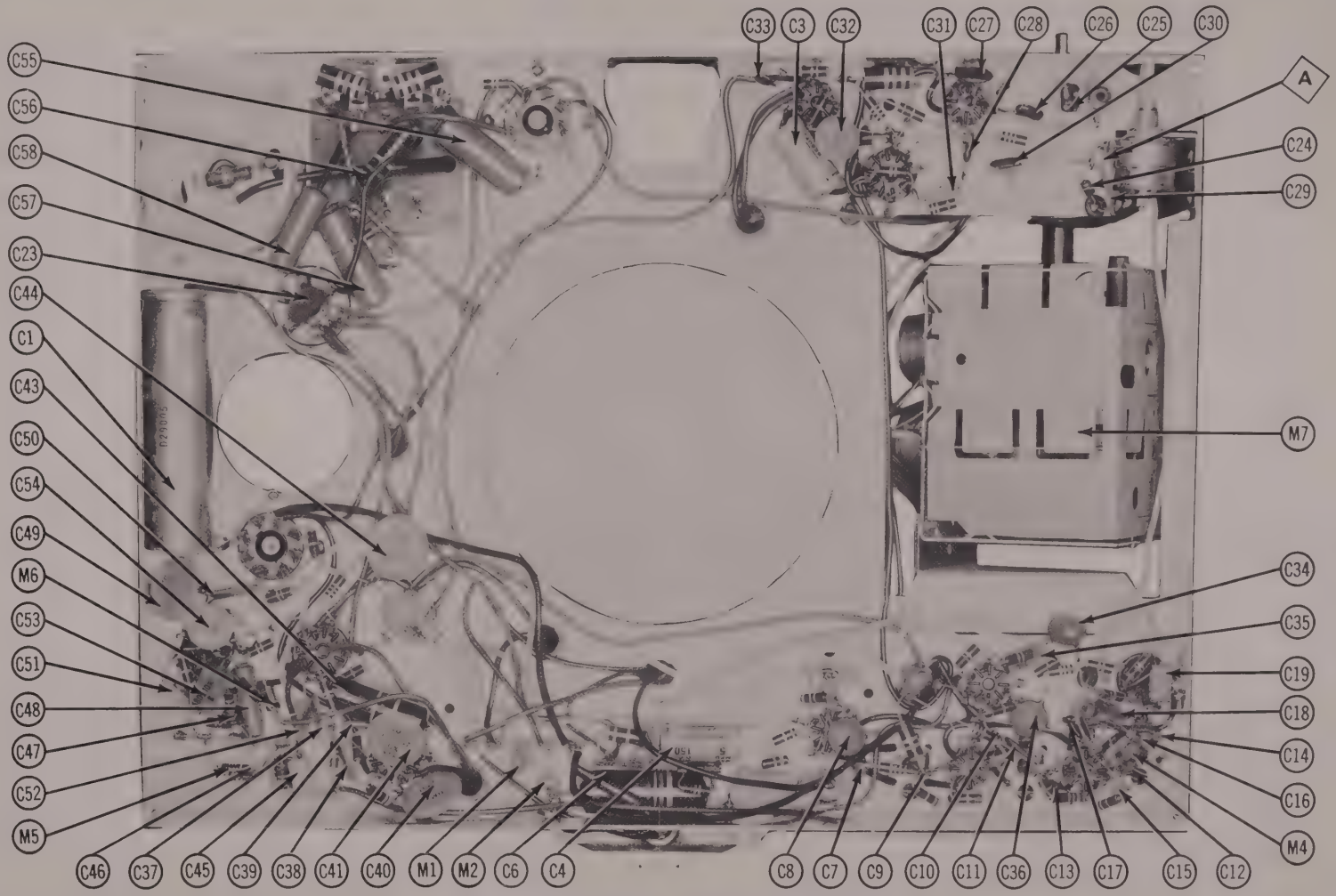
Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 1 o'clock, and should be adjusted first. The LOW band adjustment is located at 6 o'clock. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



TUNER 57B48 — TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA — USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp	6BZ6
V4	Video Output-AGL Keying	6AW8A
V5	Sound IF Amp.	6AU6
V6	Ratio Det.-AF Amp.	6BN6
V7	Audio Output	6AQ5
V8	Noise Limiter-Sync Sep.	6CS6
V9	Vert. Mult.	12AU7A
V10	Vert. Output	6CM6 (6EM5) *
V11	Horiz. Mult.	12AU7A
V12	Horiz. Output	6DQ6A
V13	Damper	6AX4GT
V14	HV Rect.	1G3GT/1B3GT

* Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: Setchell-Carlson PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	17DEP4		17DEP4 ①			① Aluminized

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: Setchell-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	200	300		PRL-075	BBR20025	WSR42	TD-200-300	TVA-1480	
C2A	▲140	350		AFSD-20-98	▲20048			TVL8-3648 *	
B	▲140	350			BBR10035				
C	■30	350							
C3	6	150		SRE150V5	BBR4-150	TT150X5	TD-4-150	TVA-1403	
C4	5	150		SRE150V5	BBR4-150	TT150X5	TD-4-150	TVA-1403	
C5	100	50		PRS380	BR1005	TC3501	TD-100-50	TVA-1310	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.47 200V		P3SBN-47		CUB2P47	2DP-5-474	GEM-3047	27M-P47
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP250	5HK-D10
C8	10000		BPD-01	DD-103	BYA10R1	CCD-103	GP110	5HK-S10
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP250	5HK-D10
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP250	5HK-D10
C11	10000	(1000mmf) *	BPD-01	DD-103	BYA10R1	CCD-103	GP110	5HK-S10
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP250	5HK-D10
C13	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP250	5HK-D10
C14	6.8 5%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-Y6S
C15	10 5%		NPO-SI 10	TCZ-10	C10QSC	CM-19B-100J	CNO-410	10TCC-Q10
C16	2.2 5%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C17	70 10%	(56mmf) *	1469-0000T	TCZ-66	22S2Q7	CM-19B-560K	CNO-468	MS-47
C18	10000	Note 1	BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C19	100 10%		1469-0001	TCZ-100	22RST1	CM-20B-101K	MCB225	MS-31
C20	56 10%		1469-000056	TCZ-56	22S4S26	CM-19B-560K	CNO-456	MS-456
C21	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	47M-P1
C22	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP250	5HK-D10
C23	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C24	2.2 5%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C25	56 10%		1469-000056	TCZ-56	22S4Q26	CM-19B-560K	CNO-468	MS-468
C26	56 10%		1469-000056	TCZ-56	22S2Q56	CM-19B-560K	CNO-456	MS-456
C27	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C28	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP110	5HK-D10
C29	5000 10%		DE-5000		PM5D1	CCD-502	JL-250	10TS-D50
C30	10000		BPD-01	DD-103	BYA10R1	CCD-103	GP110	5HK-S10
C31	100 10%		1469-0001	TCZ-100	22RST1	CM-20B-101K	MCB225	MS-310
C32	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C33	1000	(10000mmf) *	BPD-001	DD-102	BYA10D1	CCD-102	GP250	5HK-D10
C34	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C35	270 10%		1469-0002T	TCZ-270	22S27	CM-19B-271K	CNO-427	MS-327
C36	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C37	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C38	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C39	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C40	30000		BPD-03	DD-303	BYB5R3	CCD-303	GP130	5HK-S30
C41	4700 10%	(3300mmf) *	DE-4700		PM5D47	CCD-472	JL247	10TS-D47
C42	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C43	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	47M-P1
C44	30000		BPD-03	DD-303	BYB5R3	CCD-303	GP130	5HK-S30
C45	100 10%		1469-0001	TCZ-100	22RST1	CM-20B-101K	MCB225	MS-31
C46	100 10%		1469-0001	TCZ-100	22RST1	CM-20B-101K	MCB225	MS-31
C47	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP110	5HK-D10
C48	.0033 400V 10%		V84C4D33-10%		PM6D33	6DP-1-332	JL-233	6TM-D33
C49	30000 10%				PM6S3	6DP-3-303	GEM-613	6TM-D3
C50	9000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C51	680 10%		1469-00068	DD-681	1R5T68	CM-20B-680K	MCJ349	MS-368
C52	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C53	680 10%		1469-00068	DD-681	1R5T68	CM-20B-680K	MCJ349	MS-368
C54	10000		BPD-01	DD-103	BYA10R	CCD-103	GP110	5HK-S10
C55	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	47M-P1
C56	.005 400V 10%		V84C6D5-10%		PM5D6	6DP-1-502	JL-250	6TM-D5
C57	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	47M-P1
C58	.033 400V 10%		V84C4S33-10%		PM4S33	4DP-2-333	GEM-1613	47M-S33
C59	10000		BPD-01	DD-103	BYA10R1	CCD-103	GP110	5HK-S10

Note 1 May not be used in early versions. * Alternate Value

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: Setchell-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	S16R	B-60-S	A47-500K-2	Q13-133	U46	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	T6-1	US-26	Power Off-On Contrast
R2	15K	½	S11	BT-15-S *		Q13-115XX*		
	5000Ω Tap							
R3A	2.5meg	½	S03	BX-S3	A47-2.5meg-2	B11-239	SU-565	Brightness, Note 1
B	Shaft			Not Req.	FS2-1/4	SK-5	Not Req.	
R4A	2.5meg	½	S03	BX-S3	A47-2.5meg-2	B11-239	SU-565	Vert. Hold, Note 1
B	Shaft			Not Req.	FS2-1/4	SK-5	Not Req.	
R5A	2.5meg	½	S03	BX-S3	A47-2.5meg-2	B11-239	SU-565	Horiz. Hold, Note 1
B	Shaft			Not Req.	FS2-1/4	SK-5	Not Req.	
R6A	2.5meg	½	S03	BX-S3	A47-2.5meg-2	B11-239	SU-565	Height, Bottom, Note 1
B	Shaft			Not Req.	FS2-1/4	SK-5	Not Req.	
R7A	3000Ω	½	S01B	AB-S	B47-3000-S	B11-113	SU-5	Height, Top (Vert. Lin.)
B	Shaft			AK-1	Not Req.	SK-5	Not Req.	

* Do not use 10K tap.
Note 1. Some versions may use 2meg in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	220K	
R9	470Ω	
R10	220K	
R11	180Ω	
R12	820Ω	
R13	68000Ω	
R14	82Ω	(68Ω) *
R15	10K 1W	Note 1
R16	470Ω	
R17	680Ω	(820Ω) *
R18	470Ω	Note 1
R19	470Ω	
R20	180Ω	(120Ω) *
R21	4700Ω	
R22	1meg	Note 1
R23	47K	
R24	22K	
R25	10K 2W	
R26	2200Ω	
R27	4.7meg	Note 1
R28	470K	
R29	3Ω 5W	
R30	100K	
R31	33K 2W	
R32	180Ω	
R33	33K	
R34	22K	
R35	4.7meg	
R36	470K	
R37	1meg	
R38	15K	
R39	330Ω 1W	
R40	2000Ω 5W	
R41	10K	(4700Ω) *
R42	2.2meg	
R43	220K	
R44	2.2meg	
R45	22K	
R46	22K	
R47	82000Ω	
R48	4700Ω	
R49	220K	
R50	4700Ω	
R51	470K	Note 1
R52	1meg	
R53	2.2meg	(4.7meg) *
R54	47K	(33K) *
R55	470Ω	
R56	6300Ω	
R57	220K	
R58	470Ω	
R59	470Ω	
R60	470K	
R61	470K	
R62	1meg	
R63	100K	
R64	2.2meg	
R65	100K	(68K) *
R66	22K 1W	
R67	120K	(150K) *
R68	22K	(15K) *
R69	1300Ω	
R70	18K	
R71	1meg	
R72	82Ω	(22Ω) *
R73	39K 2W	
R74	39K 2W	
R75	100K	Note 1
R76	3900Ω	
R77	2.2Ω	
R78	3300Ω 1W	
R79	3Ω 10W	(3Ω 5W) *

Note 1. May not be used in early versions.
* Alternate

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Setchell-Carlson PART No.	Gromer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st Video IF							
L2	2nd Video IF							
L3	3rd Video IF							
L4	41.25MC Trap							
L5	RF Choke							
L6	Series Peaking Coil		19-4400	19-4400	TV-202	6136		12ah
L7	Sound Take-Off Coil		20-1004	20-1004	TV-151	1469	SF-3	400ah
L8	Ratio Detector	C-4503						

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(.)	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.180A	37Ω	.75 Hy.	LM1222	26C92 ①	C-2996 ①	F-801 ①	C-2326 ①	26C92 ①	C-27X ①

① Drill new mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② 1.3A	120V ② .7A	8V ② .6A	MG18A0U	*	*				
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ② 7.2A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	TM815Z	26S73 ①	A-2815 ①②	V309 ②	VO33 ①	VO-108	26S73 ①	A-11X ②
T3	Yoke-Horiz. (20MH)	Y110	Y-53 ①					Y-53 ①	Y-62 ②
T4	(110°)-Vert. (35MH) Horiz. Output	TWF110							NW-20

① Drill new mounting hole(s). ② Use original rear cover and centering device.
③ Connect as autoformer

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6000Ω	3-4Ω	M10283C	24S52	A-2931	AU-602	A-3878	24S52	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Setchell-Carlson PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	W10	5A15	

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Setchell-Carlson PART No.	INTERNATIONAL PART No.	ITT PART No	SARKES TARZIAN PART No	SYLVANIA PART No.	NOTES
M1	.210A		5E4	HA504	40K	SR500	Selenium Type
M2	.210A		5E4	HA504	40K	SR500	Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: Setchell-Carlson PART No. LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M3	3AG	2A 250V	312002 (3AG 2A 250V)	342001	AGC 2	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Setchell-Carlson PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N60		1N60	1N60	1N60	Video Detector (Pigtail)
M5	1N60		1N60	1N60	1N60	Horiz. Phase (Pigtail)
M6	1N60		1N60	1N60	1N60	Horiz. Phase (Pigtail)

MISCELLANEOUS

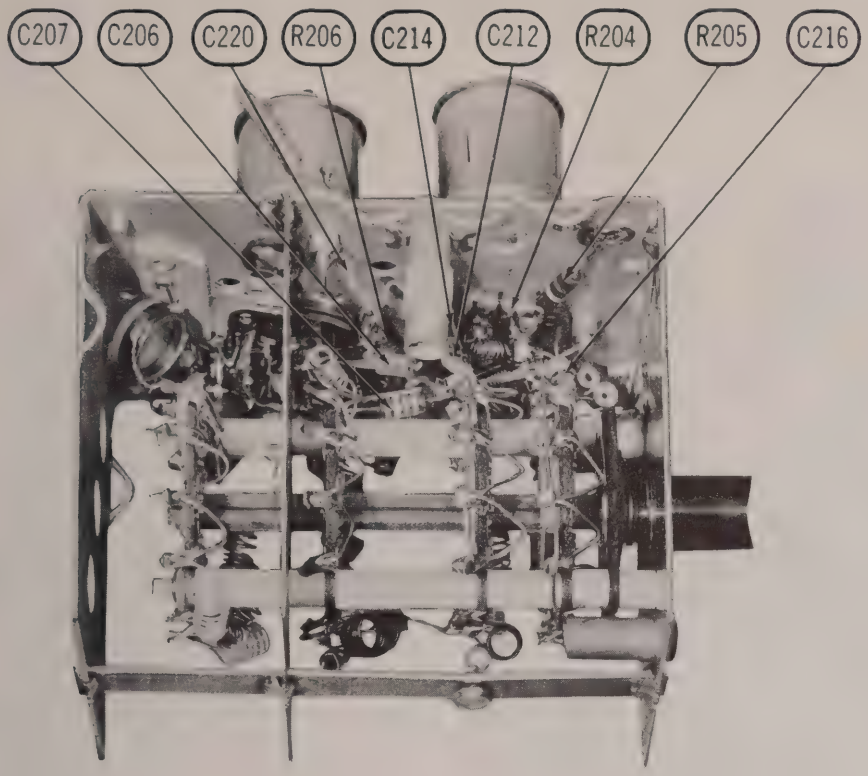
ITEM No.	PART NAME	Setchell-Carlson PART No.	NOTES
M7	Tuner	57B48	VHF

CABINETS & CABINET PARTS

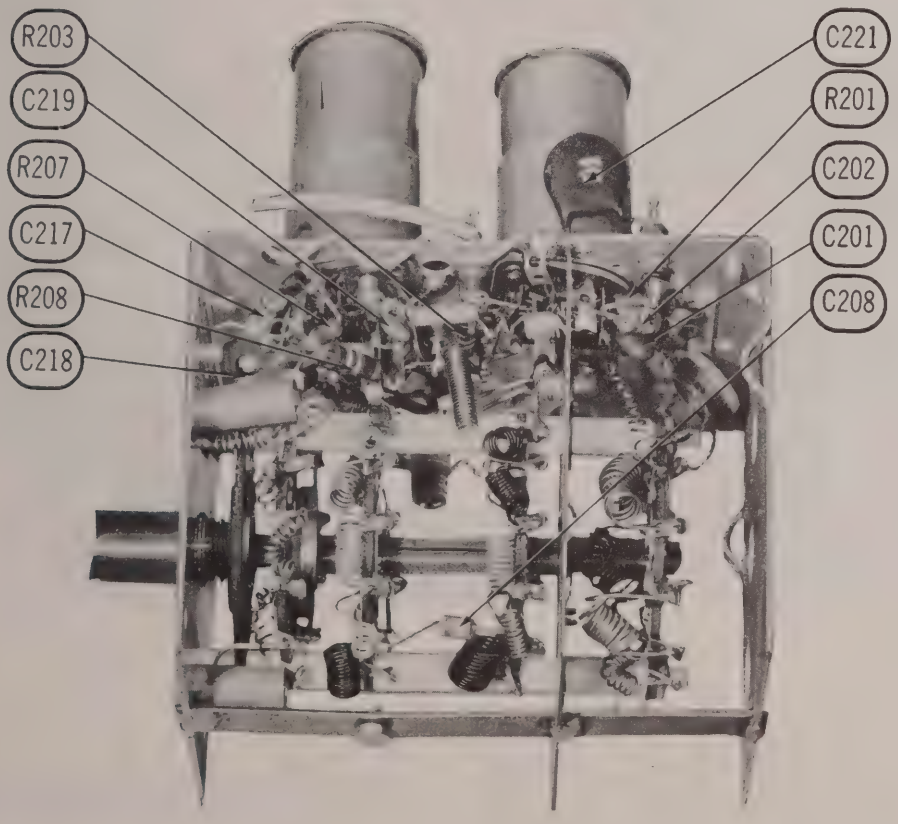
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

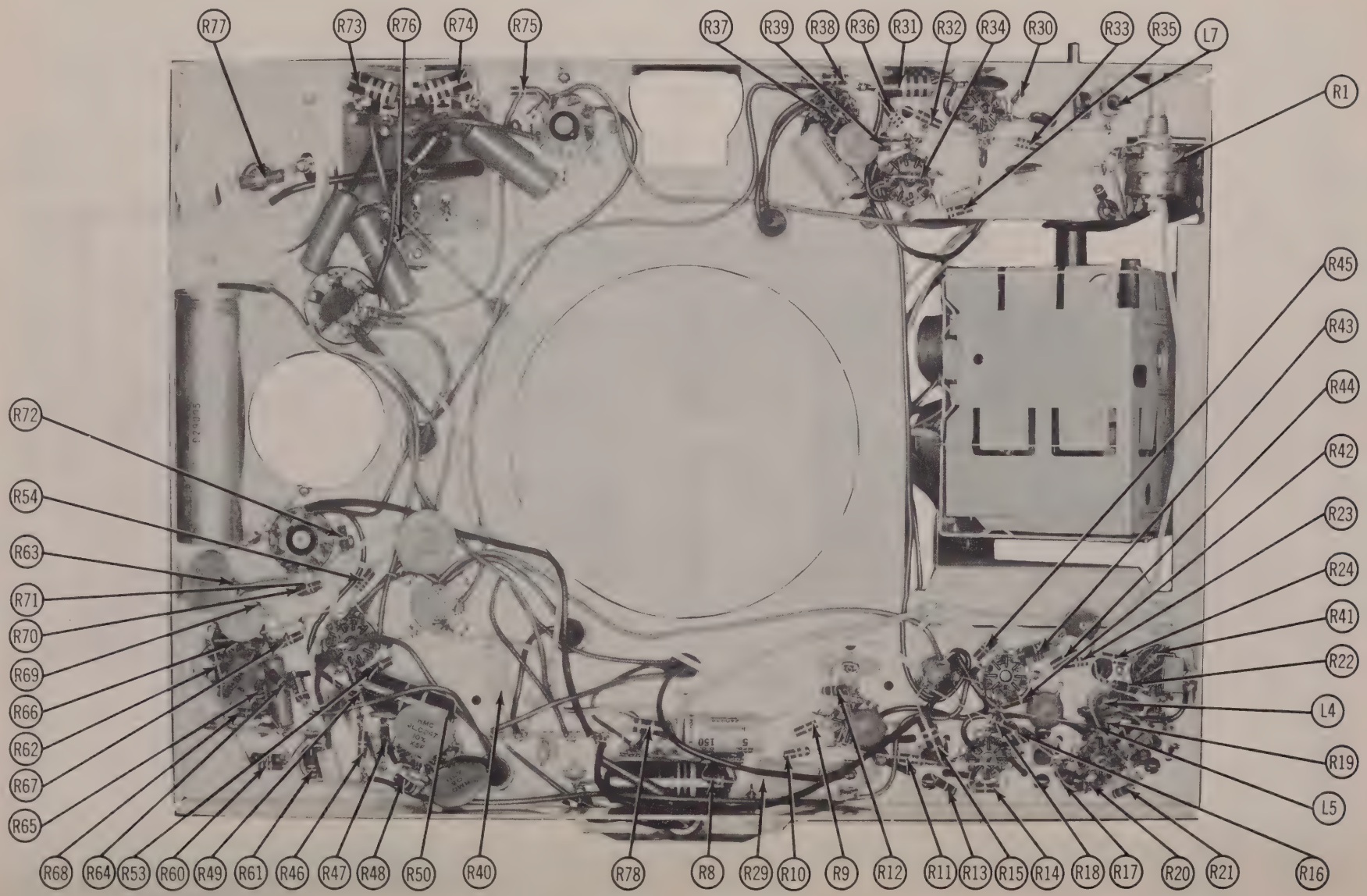
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



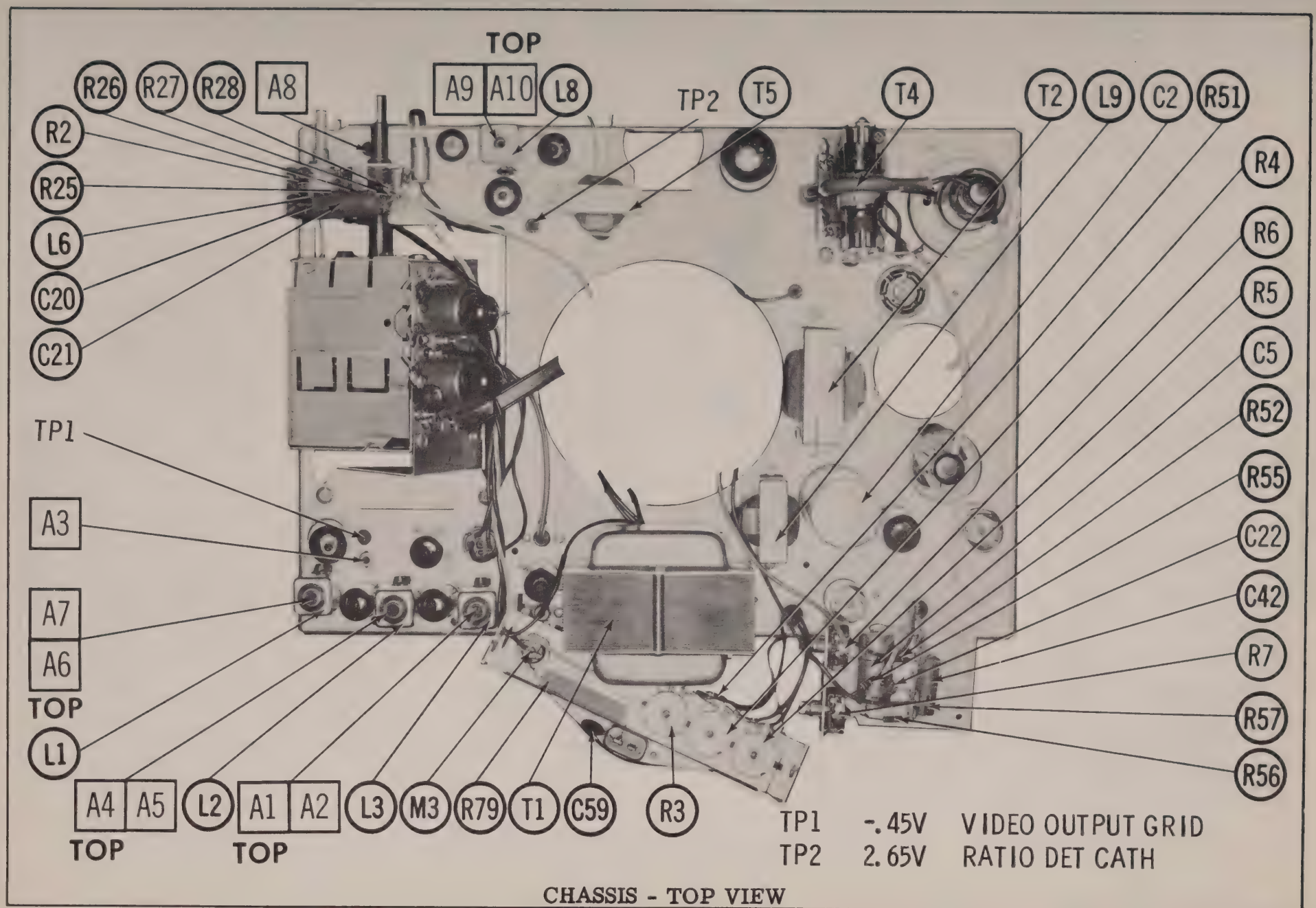
TUNER 57B48 — LEFT SIDE



TUNER 57B48 — RIGHT SIDE



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



CHASSIS - TOP VIEW

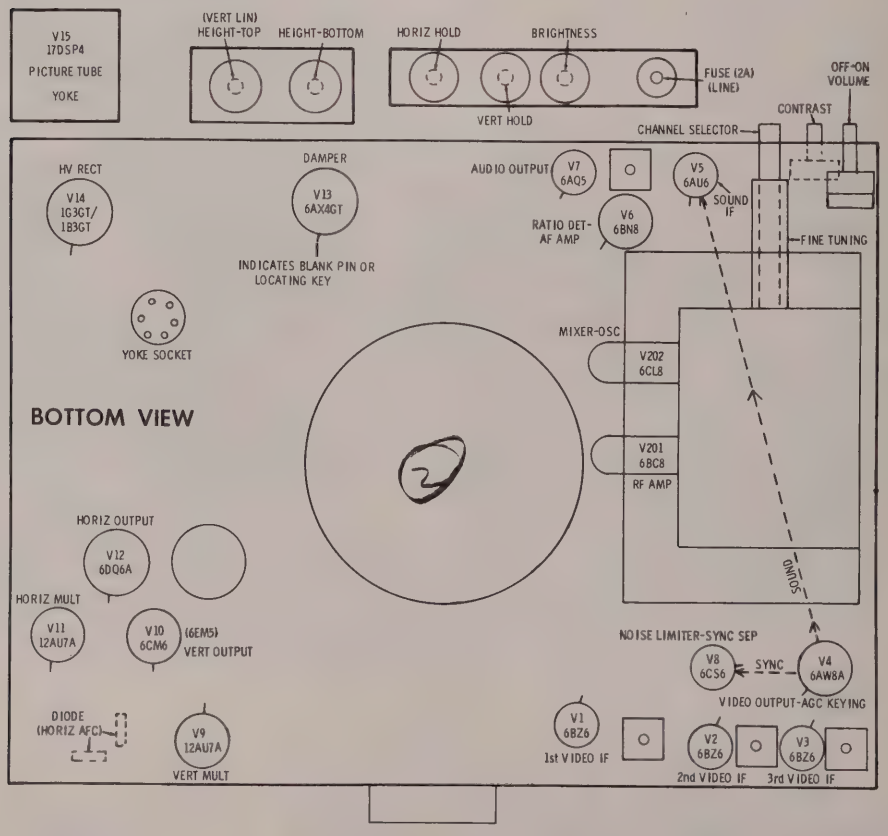
MODEL P66 (Ch. C106)

SETCHELL-CARLSON

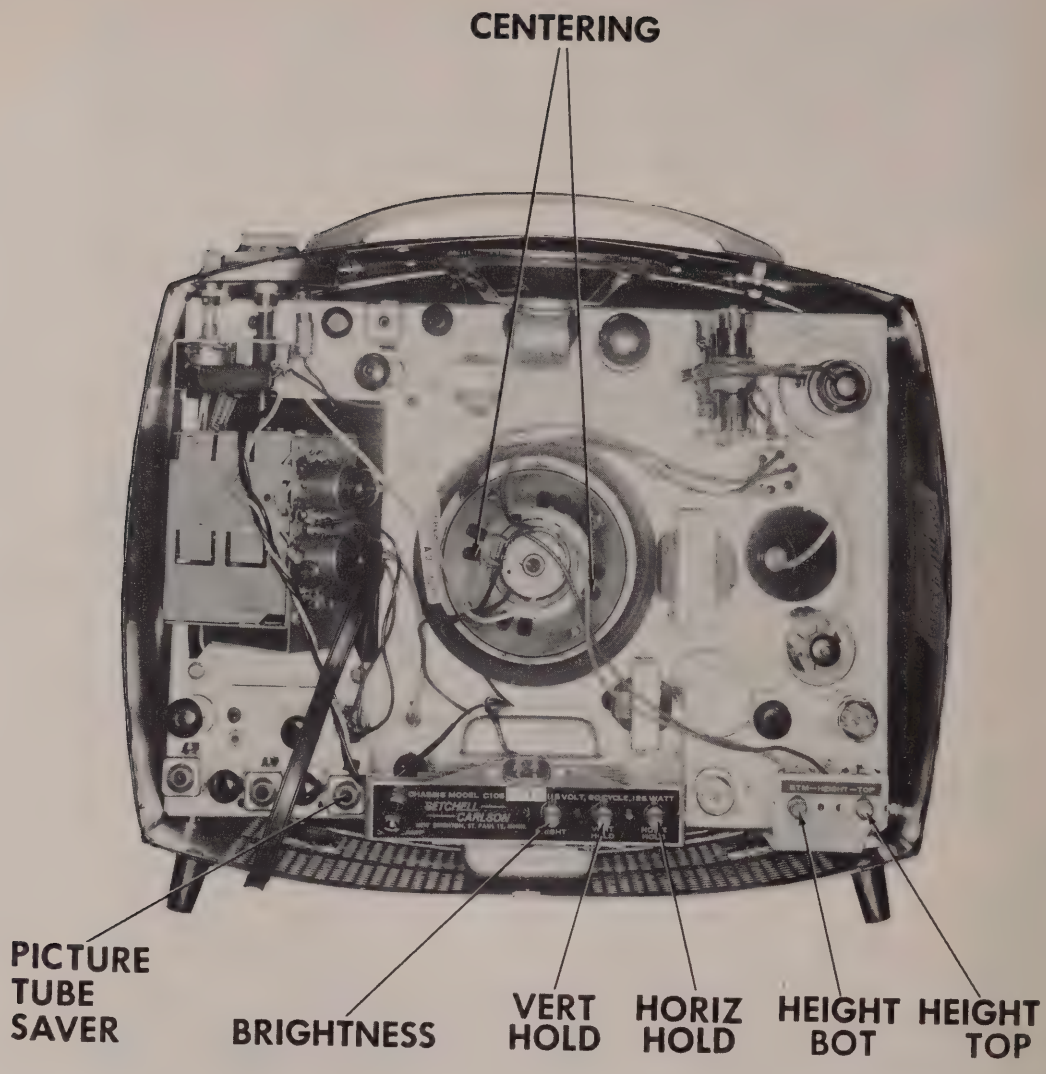
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	220K	820Ω	0Ω	.1Ω	▲ 180Ω	▲ 180Ω	820Ω		
V2	6BZ6	▲ .1Ω	▲ 82Ω	0Ω	.1Ω	† 500Ω	† 500Ω	¶ 28K		
V3	6BZ6	■ 80Ω	■ 0Ω	0Ω	.1Ω	† 500Ω	† 500Ω	¶ 18K		
V4	6AW8A	▲ 0Ω	▲ 10K	440K	.1Ω	0Ω	0Ω	1meg	▲ 10K	● † 7000Ω
V5	6AU6	100K	0Ω	0Ω	.1Ω	† 35K	† 35K	0Ω		
V6	6BN8	0Ω	530K	22K	.1Ω	0Ω	530K	† 470K	4.7meg	0Ω
V7	6AQ5	1meg	330Ω	0Ω	.1Ω	† 2400Ω	† 2000Ω	1meg		
V8	6CS6	† 2.2meg	0Ω	0Ω	.1Ω	● 23K	● 1000Ω	2.4meg		
V9	12AU7A	● † 2.5meg	● 1.2meg	4700Ω	.1Ω	.1Ω	† 220K	13K	4700Ω	0Ω
V10	6CM6	† 32Ω	NC	2.2meg	0Ω	.1Ω	2.2meg	● 1000Ω	TP	† 570Ω
V11	12AU7A	† 120K	100K	1200Ω	.1Ω	.1Ω	† 22K	1.6meg	1200Ω	0Ω
V12	6DQ6A	NC	.1Ω	TP	† 100K	1meg	TP	0 Ω	0Ω	TOP CAP † 10Ω
V13	6AX4GT	NC	NC	¶ 250K	NC	† 27Ω	NC	.1Ω	0Ω	
V14	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP † 210Ω
V15	17DSP4	3Ω	230K	† 14Ω	† 27Ω	NC	NC	● 1.1meg	.15Ω	
V201	6BC8	† 28Ω	INF	INF	0Ω	.1Ω	INF	1.2meg	0Ω	0Ω
V202	6CL8	15K	▲ 4700Ω	0Ω	0Ω	.1Ω	▲ 2200Ω	▲ 0Ω	0Ω	230K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 255V SOURCE.
‡ MEASURED FROM PIN 3 OF V13.
▲ MEASURED FROM PIN 7 OF V2.
■ MEASURED FROM PIN 7 OF V3.
▲ MEASURED FROM 115V SOURCE.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the Horizontal Hold until the picture synchronizes horizontally. If the control must be turned either extreme to sync the picture, or if slow warm-up causes frequency drift, replace the Horizontal Multivibrator (12AU7A) and readjust the Horizontal Hold.

PHOTOFACT® Folder with CIRCUITRACE®

EIA

ADMIRAL MODELS Y821, Y822, 711, 717 (Ch. 8T1, 8T1A)

ADMIRAL MODELS Y821, Y822, 711, 717 (Ch. 8T1, 8T1A)

MODEL 717

ADMIRAL MODELS Y821, Y822, 711, 717 (Ch. 8T1, 8T1A)

TRADE NAME	Admiral Models 711, 717 (Ch. 8T1); Y821, Y822 (Ch. 8T1A)
MANUFACTURER	Admiral Corp., 3800 W. Cortland Street, Chicago 47, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver (Y Series Are Clock Versions)
POWER SUPPLY	6 Volts DC (Radio), 1.5 Volts DC (Clock)
TUNING RANGE—BROADCAST	532 - 1620KC
RATING	9 MA@6 Volts DC (No Signal, Min. Volume) 25 MA@6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2, A3, A5..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A4, A6..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A4	"
3.	"	532KC	Tuning gang fully closed.	"	A5	"
4.	"	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

DISASSEMBLY

1. Insert coin in slot on bottom edge of case.
2. Twist coin and remove case back.
3. Remove control knobs.
4. Remove screw from each corner of printed board.
5. Remove chassis.

CLOCK REMOVAL

1. Remove knobs and rear cover.
2. Remove clock battery. Remove screw from center of battery holder.
3. Unsolder clock leads. (Note polarity)
4. Remove 2 Phillips screws holding 2 "S" brackets. Remove clock.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JF582

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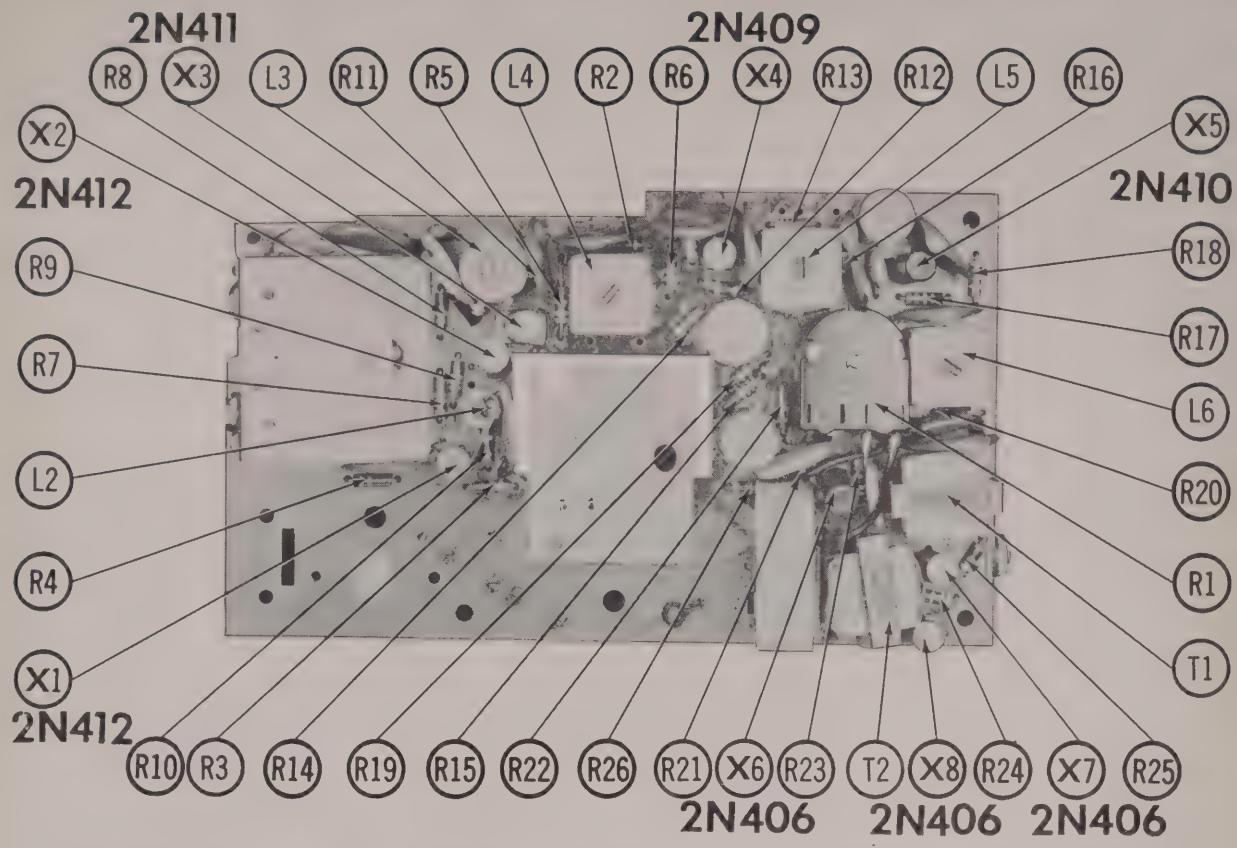
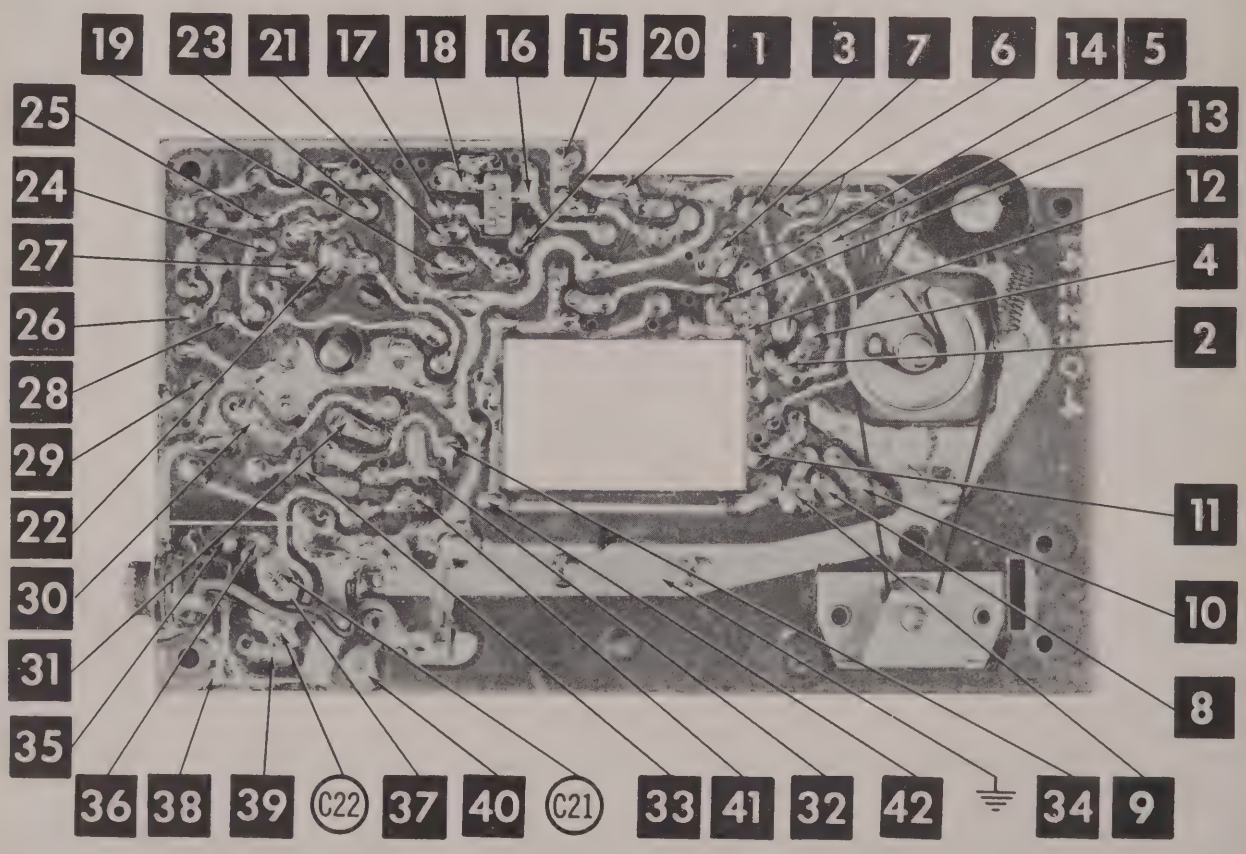
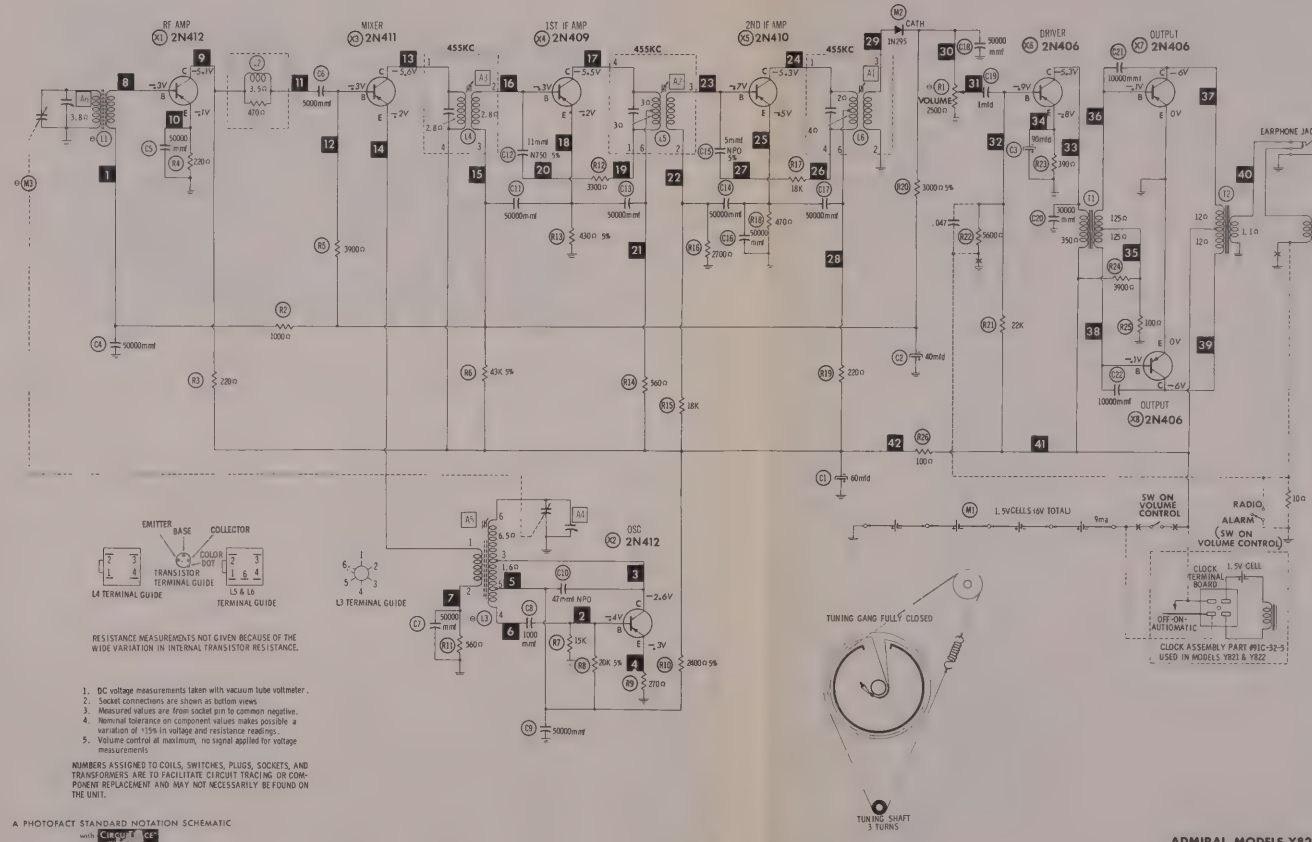


CHASSIS TOP VIEW - RESISTOR, INDUCTOR & TRANSISTOR IDENT.



A Howard W. Sams CIRCUITRACE* Photo

PRINTED BOARD



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUIT FACTS

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ADMIRAL MODELS Y821, Y822, 711, 717 (Ch. 8T1, 8T1A)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N412	RF Amplifier		2N412	2N486	2N412	PNP
X2	2N412	Oscillator		2N412	2N485	2N412	PNP
X3	2N411	Mixer		2N411	2N486	2N411	PNP
X4	2N409	1st IF Amplifier		2N409	2N483	2N409	PNP
X5	2N410	2nd IF Amplifier		2N410	2N483	2N410	PNP
X6	2N406	Driver		2N406	2N362	2N406	PNP
X7	2N406	Output		2N406	2N633	2N406	PNP } Matched
X8	2N406	Output		2N406	2N633	2N406	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	60	6	67B32-8	BCD6075	NLW60-6	PET1260	ML75-6	TE-1101	
C2	40	3	67B32-9	BCD3035	ECPA214	PET140	ML40-6	VL-1043	
C3	90	3	67B32-10	BCD3100	ECPA17	PET1400	ML100-3	VL-1051	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C5	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C6	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C7	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C9	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C10	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C11	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C12	11 N750 5%		N750-DI 10	TCN-12	C10Q12U		CNO-412	10TCU-Q12
C13	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C14	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C15	5 NPO 5%		NPO-DI 5	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C16	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C17	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C18	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C19	1mfd 3V	#65B45-15		UK-105				HY135
C20	30000		BPD-03	DD-303	BYB6S3	CCD-303	GP303	5HK-S30
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

Admiral Part Number

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	2500Ω Switch	1/4	75B51-1					Volume, Note 1 Power Off-On

Note 1. Models Y821 & Y822 use Part #75B51-2.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	220Ω	
R4	220Ω	
R5	3900Ω	
R6	43K 5%	
R7	15K	
R8	20K 5%	
R9	270Ω	
R10	2400Ω 5%	

ITEM No.	RATING	REMARKS
R11	560Ω	
R12	3300Ω	
R13	430Ω 5%	
R14	560Ω	
R15	18K	
R16	2700Ω	
R17	18K	
R18	470Ω	
R19	220Ω	

ITEM No.	RATING	REMARKS
R20	3000Ω 5%	
R21	22K	
R22	5600Ω	
R23	390Ω	
R24	3900Ω	
R25	100Ω	
R26	100Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	69B218-6						①
L2	RF Choke	73C5-38						②
L3	Osc. Coil	69B232-3						③
L4	1st IF Trans.	72C182-8						
L5	2nd IF Trans.	72C182-9						
L6	3rd IF Trans.	72C182-10						

① Chassis 8T1A use Part #69B218-11.
② Wound on 470Ω Resistor.
③ Chassis 8T1A use Part #69B232-7.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	79B84-1	TR-2 ①		TA-30 ①	TR-2①	TY-27XT ①	① Remove Frame And Glue To Printed Board.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	250Ω CT	12-14Ω	79B85-1	TR-15 ①				TR-15 ①		① Remove Frame And Glue To Printed Board.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	2 3/4"	PM	12-14Ω	78B125-3	27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V 1.5V			Z ① 130②		915① 635②		M-1015R① M-14R②	① 4 Required (Radio) ② (Clock)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295	1N295	1N60	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M3	Tuning Cap	68C73-2	2 Gang, Models 711, 717 (Ant. — 123.1mmf Max., Osc. — 73.4mmf Max.)
	Tuning Cap	68B75-1	2 Gang, Models Y821, Y822
	Clock	91C32-5	Models Y821, Y822

CABINETS & CABINET PARTS

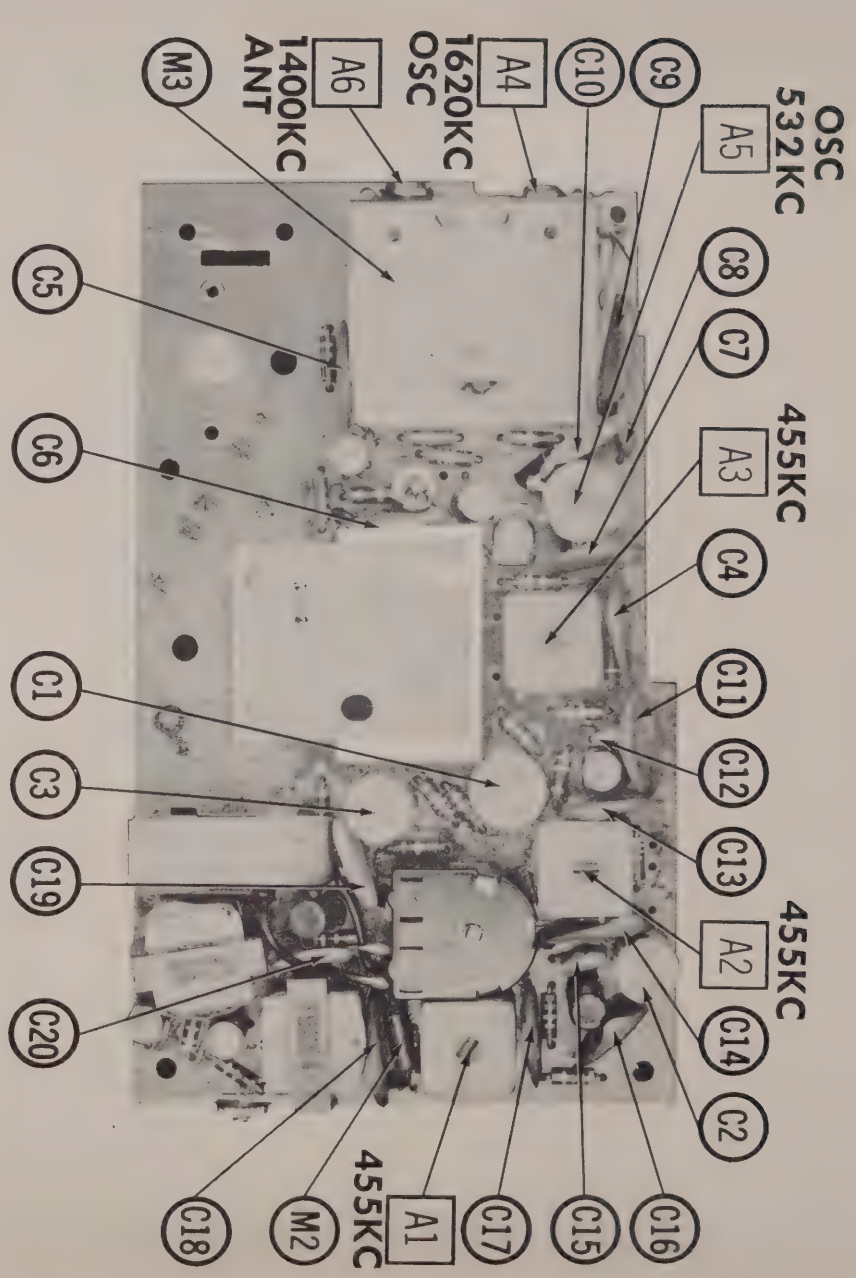
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33B326-1	Tuning, Volume, Models 711, 717; Volume, Model Y821, Y822
Knob	33B326-2	Tuning, Model Y821, Y822
Knob	33B327-3	Station Indicator, Models 711, 717
Knob	91C23-10	Clock
Cabinet Front	34E141-9	Model 711
Cabinet Front	34E142-2	Models Y821, Y822
Cabinet Front	34E141-10	Model 717
Cabinet Rear	34E142-6	Model Y821
Cabinet Rear	34E141-5	Models 711, 717
Cabinet Rear	34E142-5	Model Y822
Handle	37A193-1	Model 711, 717
Pointer	25B70-1	Models Y821, Y822
Crystal	24C29-2	Clock Front; Models Y811, Y822

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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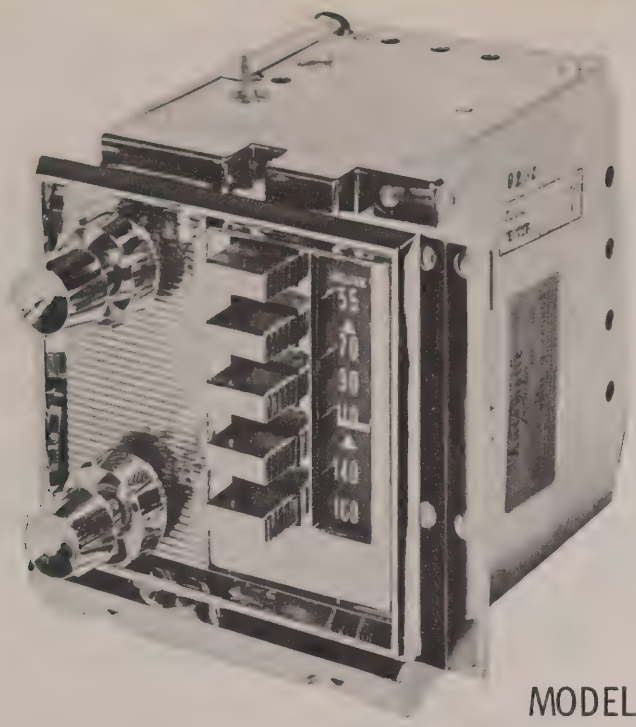
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

AUTOMATIC
MODEL MAP-99, MT-419

AUTOMATIC
MODEL MAP-99, MT-419



MODEL MT-419

AUTOMATIC
MODEL MAP-99, MT-419

TRADE NAME	Automatic Model MAP-99, MT-419 (For 1959 Mercury Automobiles)
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Battery Operated 4 Tube Custom Built AM Automobile Receiver With Transistorized Output
POWER SUPPLY	12 Volt Storage Battery
RATING	1.1 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	538-1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

A5, A6..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	265KC (400~ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Thru dummy (Fig. 1) to antenna receptacle.	"	"	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

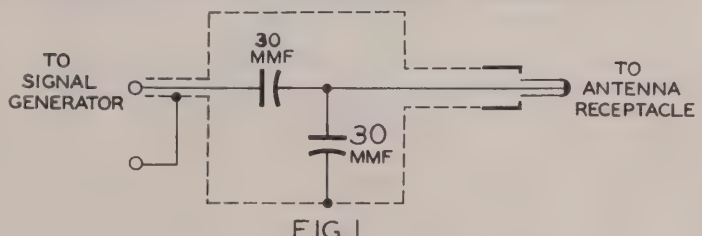


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD677

SET 479 FOLDER 4

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	RF Amplifier	12BL6 (12AF6) *
V2	Converter	12AD6
V3	IF Amplifier	12BL6 (12AF6) *
V4	Det. -AVC-AF Amp.	12AE6A (12FT6) *

* Alternate.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	SYL1668*	Driver			2N363		PNP
X2	2N176 ♦	Output	2N155	2N176		2N176	PNP

* Type 2N363 may be used in some versions.
♦ Type 1124 may be used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	500	15	20-315GS	PRS2020	BR5001	TCD16		TVAS-2140 *	
B	150	15			BR2501				
C2	750	3	20-757	SRE3V500	BR1000-6	PETA190	TD-1000-6	TVAS-1097 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#28-800K						
C4	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C5	3000		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C6	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C7	.047 200V	Note 1	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C8	12		DI-12	DD-120	L10Q12	CCD-120	GP412	10TS-Q12
C9A								
B	40	#28-4046						
C								
C10	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C12	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C13	1500	*(3000 mmf)	BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	3000	*(10000mmf)	DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C17	3000		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C18	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47

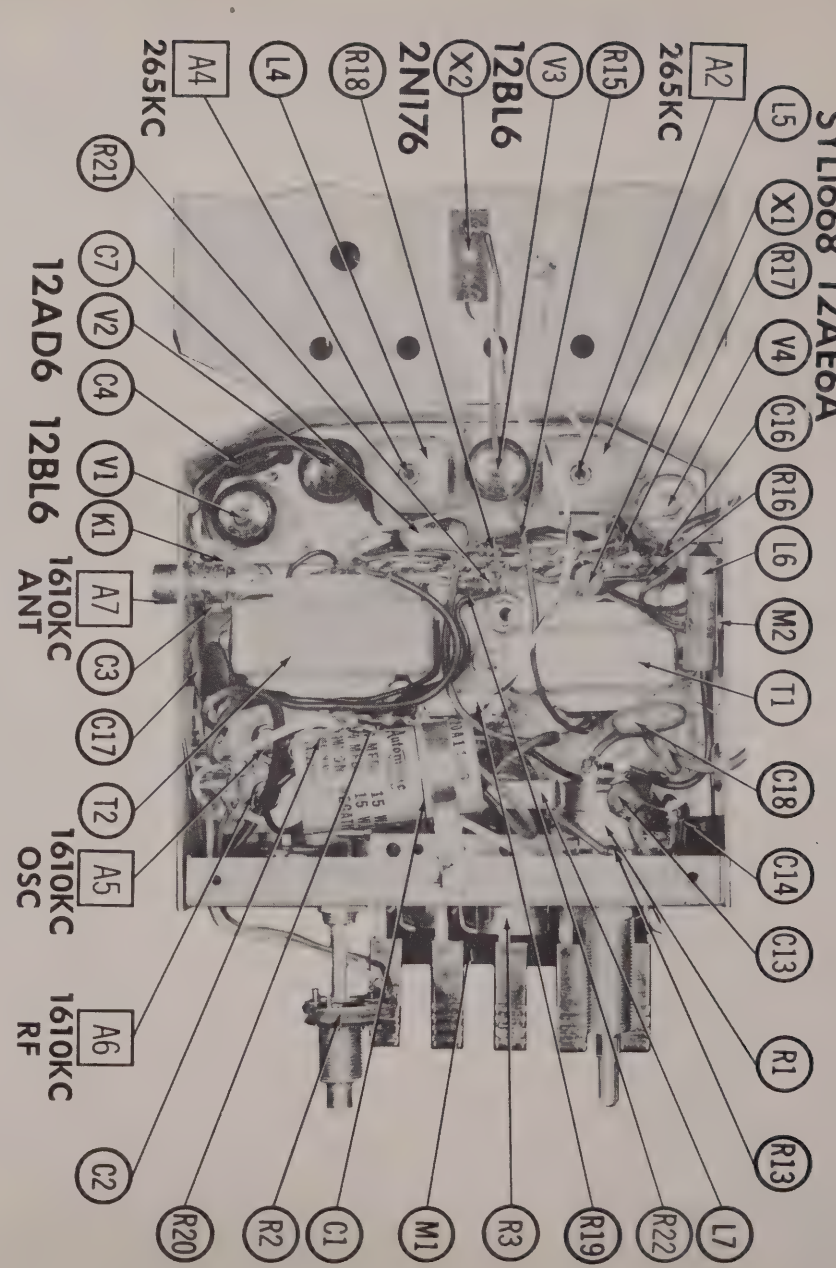
♦ Automatic Part Number. * Alternate Values.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	80A1050	F1-68				Tone
B	1meg	½		R2-60		† QJ-1143A		Volume
	650K Tap							
C	Bushing			AK-28				
D	Switch			KR-7				Power Off-On
R2	25Ω	2(WW)	80A1052					
R3	500Ω	2(WW)	62-501		39-500-100	112-500-100	FL600S	Bias

† "Concentrikit" equivalent: K-8 Kit with base elements & shafts: B13-139, P14-121 (Panel).
B19-137X, R1-202 (Rear).
S-24 Bushing
KR-7 Switch

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	150K	
R5	1500Ω	
R6	2.2meg	
R7	4.7meg	
R8	47K	
R9	10meg	
R10	10meg	

ITEM No.	RATING	REMARKS
R11	1.2meg	
R12	47K	
R13	100K	
R14	2.2meg	
R15	4700Ω	(6800Ω) *
R16	120Ω	
R17	12K	

ITEM No.	RATING	REMARKS
R18	220Ω	
R19	1Ω 1W	
R20	22Ω	
R21	470K	
R22	330Ω	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Antenna Filter	1000mmf, 1.2meg	89-4204	Sprague PRC-9

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AUTOMATIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	†						
L2	RF Coil	†						
L3	Osc. Coil	†						
L4	Input IF	14-265X	16-6752	16-6752	BC-350	12-H1	RF-3	
L5	Output IF	14-267X	16-6754	16-6754	BC-354	12-H6		
L6	"A" Hash Choke							11uh

† Part of M1 (Part #78B1051).

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L7	1.1Ω	.6Ω	.009 HY	75A6001①						

① Alternate Part #75A601.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	13	1	75A1303①						① Alternate Part #75-602A

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA							NOTES
		AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	20Ω Tap ⓐ 3-4Ω	75A-1036①							① Alternate Part # 75A967

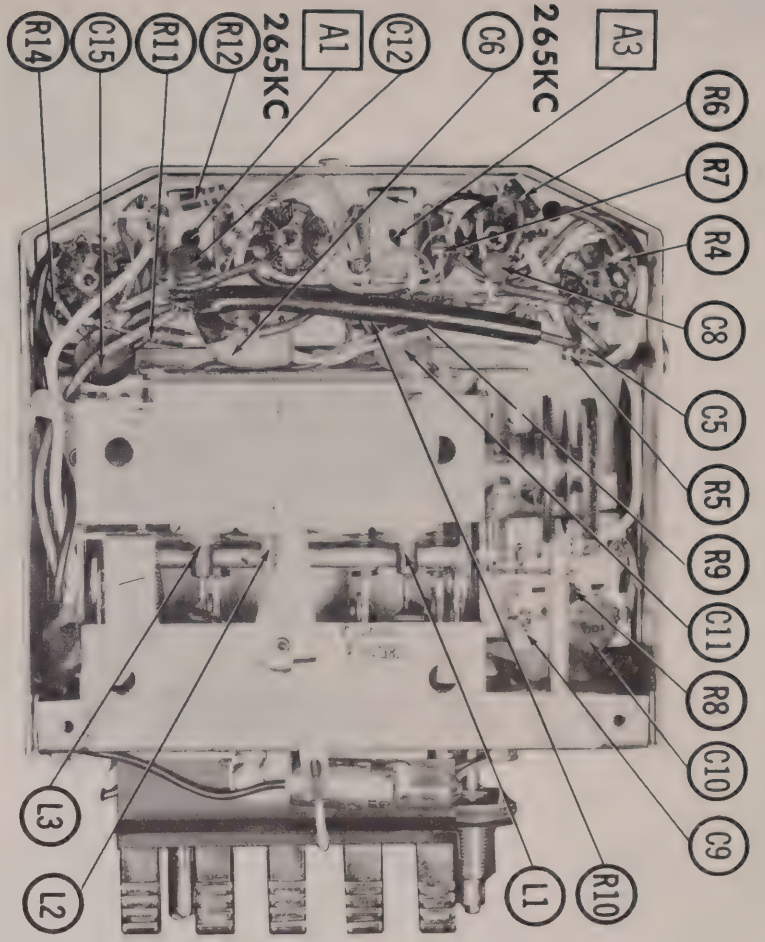
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	73B1171	69A1	

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M1	Tuner	78B1051	Push Button
M2	Spark Plate		

CHASSIS—BOTTOM VIEW



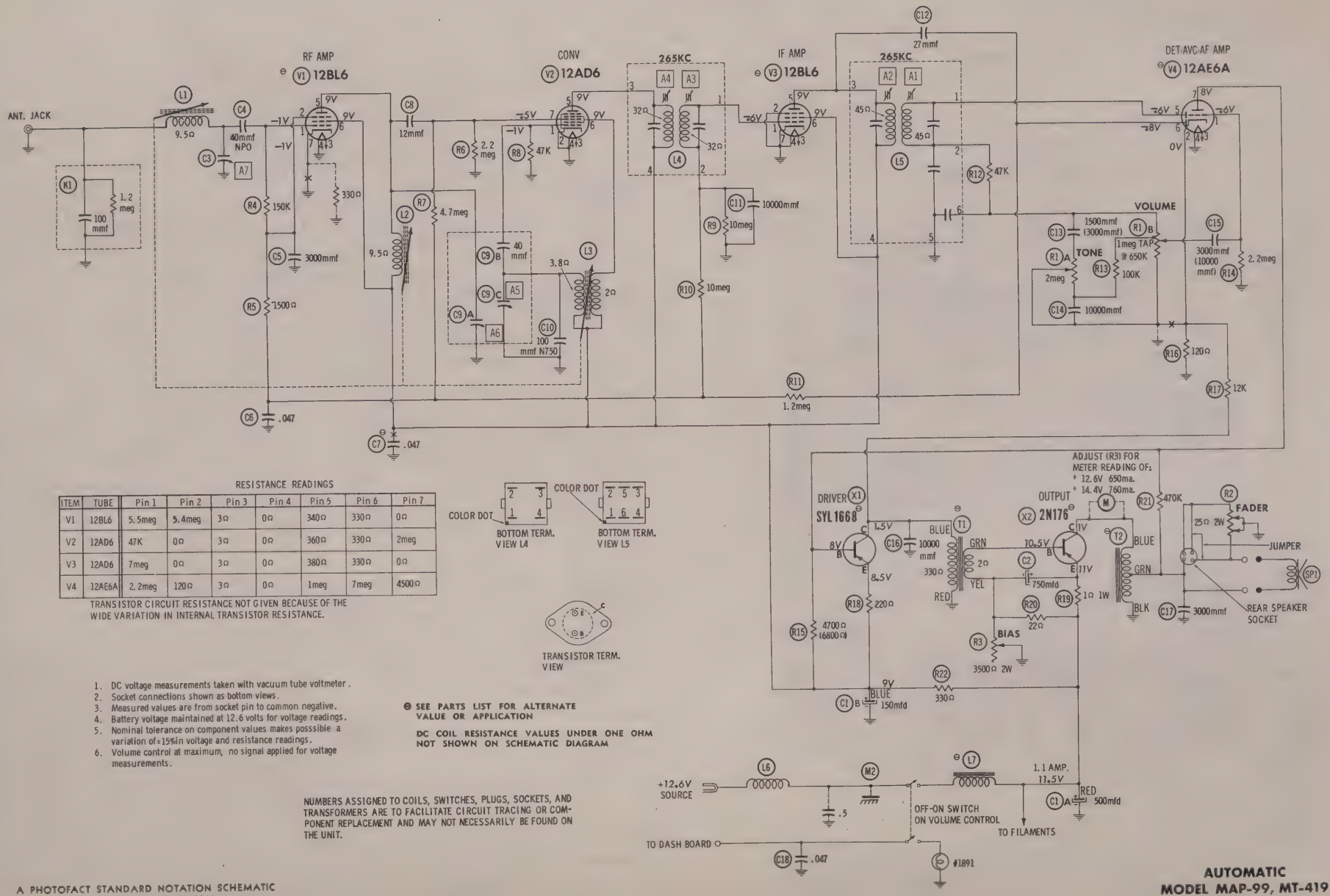
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	48A1037	Tuning, Volume
Knob	48A1038	Tone, Dummy

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	5.5meg	5.4meg	3Ω	0Ω	340Ω	330Ω	0Ω
V2	12AD6	47K	0Ω	3Ω	0Ω	360Ω	330Ω	2meg
V3	12AD6	7meg	0Ω	3Ω	0Ω	380Ω	330Ω	0Ω
V4	12AE6A	2.2meg	120Ω	3Ω	0Ω	1meg	7meg	4500Ω

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

COLOR DOT
BOTTOM TERM. VIEW L4
COLOR DOT
BOTTOM TERM. VIEW L5

TRANSISTOR TERM. VIEW

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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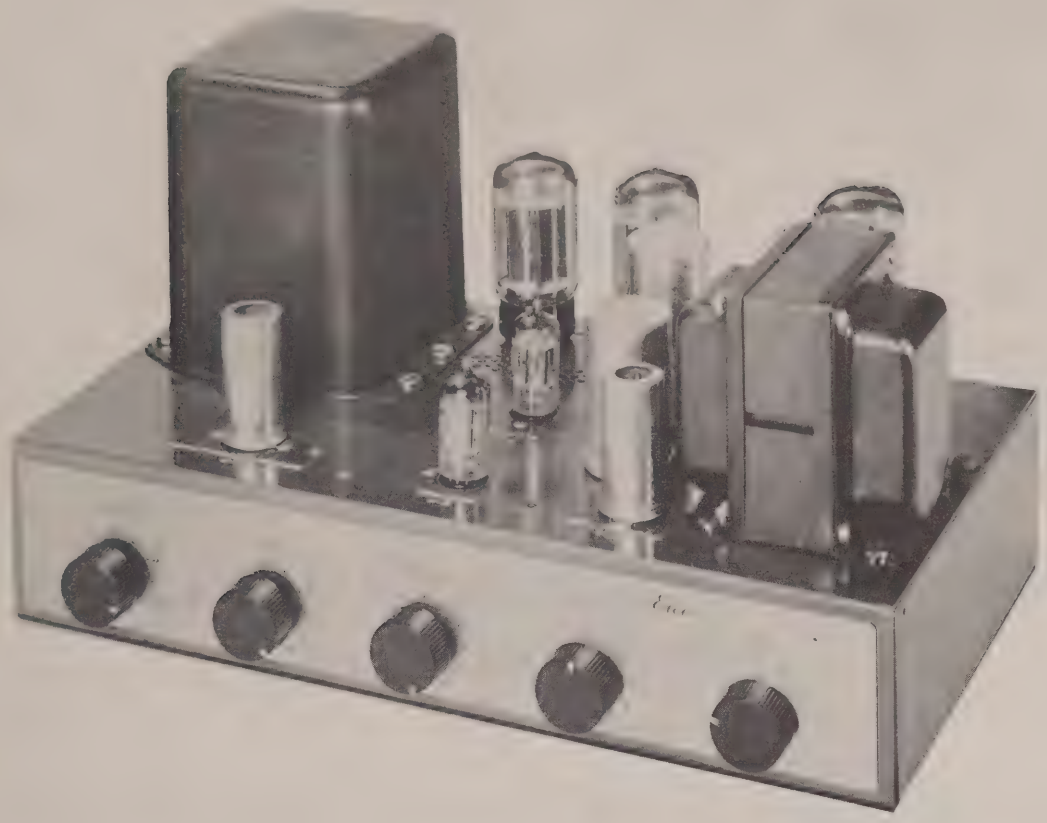
AUTOMATIC
MODEL MAP-99, MT-419

PHOTOFACT® Folder

EIA MEMBER

EICO
MODEL HF-20

EICO
MODEL HF-20



EICO
MODEL HF-20

TRADE NAME	Eico Model HF-20
MANUFACTURER	Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
TYPE SET	AC Operated 7 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 100 Watts, .9 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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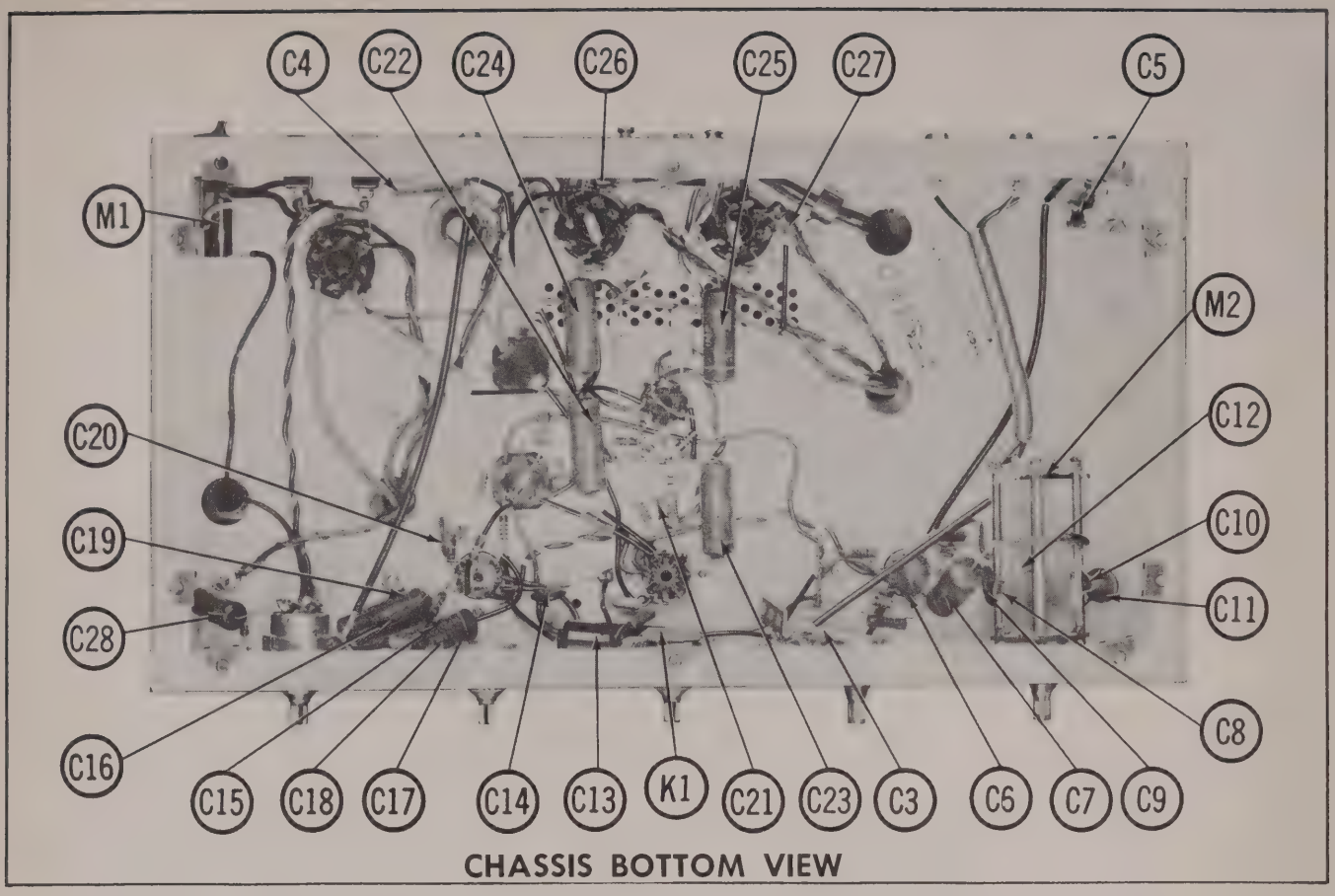
JX623

DATE 3-60 SET 479 FOLDER 5

SET 479 FOLDER 5



CHASSIS BOTTOM VIEW

CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Phono Preamplifier	ECC83(12AX7, 12AD7)*	V5	Output	6L6GB
V2	AF Amplifier	ECC83 (12AX7) *	V6	Output	6L6GB
V3	AF Amp-Phase Inverter	ECC82 (12AU7A) *	V7	Rectifier	5U4GB
V4	Driver	ECC82 (12AU7A) *			

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	EICO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	500	24008	AFH2-71-90	B0530	FP399.5	TMD-62	TVL-2950	
B	▲20	500							
C2A	■20	450	24003	AFH4-90	D0130	FP474.5	TMQ-12	TVL-4763	
B	▲20	450							
C	▲10	350							
D	10	350							
C3	10	6	23014	XPP6010	NLW10-6	TT6X10	ML10-6	TE-1087	
C4	50	50	23011	PRS1350	BR505	TC39	TD-50-50	TVA-1308	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

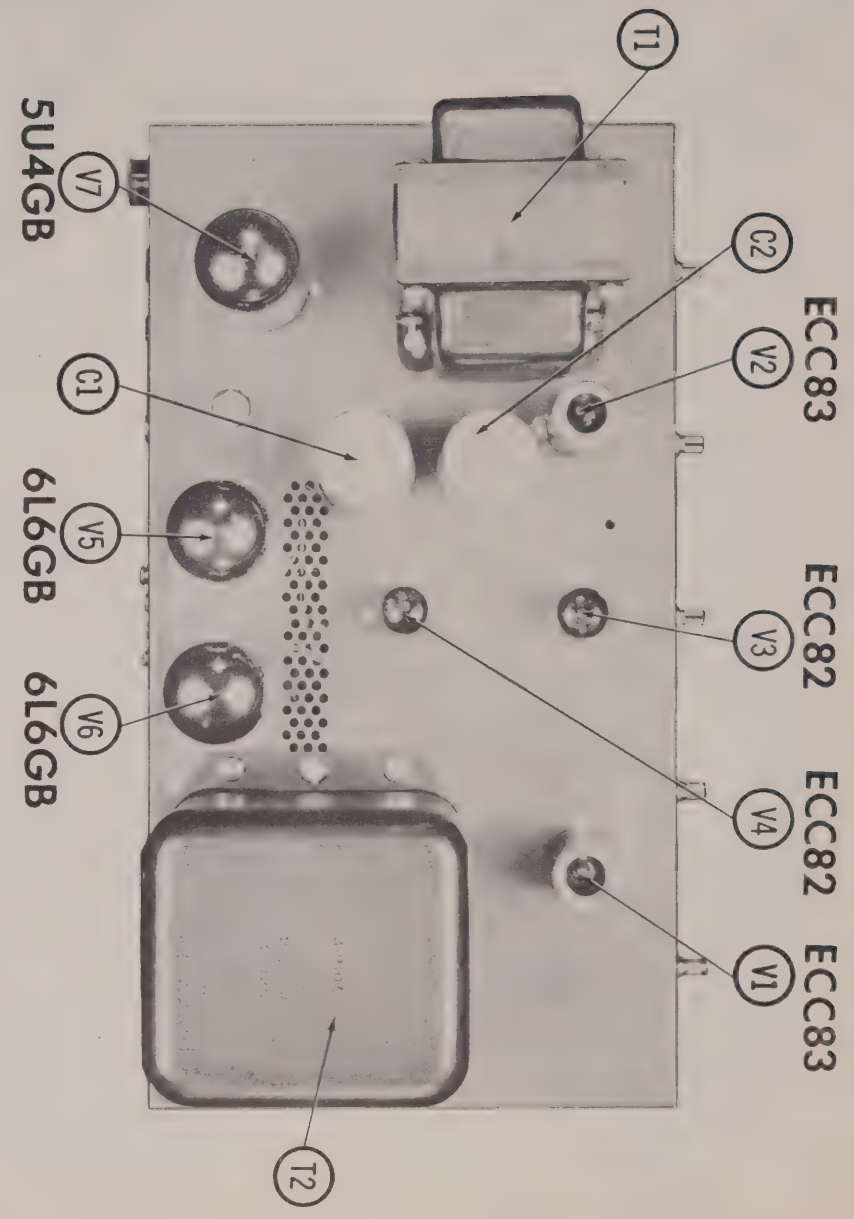
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C6	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C7	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C8	850 10%		DI-820	DD-821	1R5T82	CCD-821	GP382	10TS-T82
C9	3300 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C10	500 10%		DI-500	DD-501	5R5T5	CCD-501	GP350	10TS-T50
C11	5000 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C12	2700 10%		DI-2700		1R5D27	CCD-272		10TS-D27
C13	.25 400V		P488N-25		CUB4S25	4DP-5-254	GEM-4025	4TM-P25
C14	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C15	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C16	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C17	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C18	2700 10%		DI-2700		1R5D27	CCD-272		10TS-D27
C19	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C20	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C21	850 10%		DI-820	DD-821	1R5T82	CCD-821	GP382	10TS-T82
C22	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C23	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C24	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C25	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C26	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C27	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C28	.03 600V		P688N-03	DD-303	CUB6S3	6DP-3-303	GEM-613	6TM-S3

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EICO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K *	½	18021	C1-60 †		B20-133XX	UD2-283	Loudness
B	Shaft			Not Req.		SK1	Not Req.	
R2A	1meg	½	18020	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K 250K Tap	½	18008	BT-65	A47F5-500K	Q19-133X	UT-431	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R4A	500K	½	18019	B-60	A47-500K-Z	Q13-133	U48	Level
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R5A	100Ω	2(WW)	19009	WN-101	A43-100	W11-084	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

* Taps @ 150K, 300K.
† Includes K1.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	68K	
R7	33K	
R8	200K 5%	
R9	1200Ω 5%	
R10	375K 5%	
R11	120K 5%	
R12	2400Ω 5%	
R13	100K 5%	
R14	100K 5%	
R15	4.7meg 5%	
R16	560K 5%	
R17	2.2meg 5%	
R18	56K	
R19	330K	
R20	33K	

ITEM No.	RATING	REMARKS
R21	1200Ω	
R22	68K 5%	
R23	68K 5%	
R24	470K 5%	
R25	100K	
R26	3300Ω	
R27	10K	
R28	47K	
R29	1500Ω	
R30	470Ω	
R31	22K	
R32	22K	
R33	470K	
R34	47K 2W	
R35	1000Ω	

ITEM No.	RATING	REMARKS
R36	100K 5%	
R37	470K	
R38	47K	
R39	560Ω	
R40	47K 2W	
R41	1000Ω	
R42	100K 5%	
R43	350Ω 10W	
R44	10K	
R45	33K	
R46	47K	
R47	33K 1W	
R48	22K	
R49	6000Ω 10W	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	EICO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .9A	740 VCT @ .105A	5V @ 3A	30016	24R22U			PC8410 ①	24R22U	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.9A									

① Tape green/ yellow lead.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	EICO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7500Ω CT Tap @ 1500Ω CT	16Ω Tap @ 8Ω, 4Ω	30004	22S43①	A-3101①		A-8072	22S43①	S-146A①	① Drill New Mounting Holes

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EICO PART No.	REPLACEMENT DATA
K1	Loudness Comp.	100mmf, 200mmf, 4500mmf, 4500mmf, 50K, 50K		Aerovox PA-682 Centralab PC-324 Sprague TC-4

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			EICO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V	91000	97800	312002 (3AG 2A 250V)	341001	AGC 2	HKP-CC

MISCELLANEOUS

ITEM No.	PART NAME	EICO PART No.	NOTES
M2	Switch	60038	Function Selector (Rotary Wafer Type)

CABINETS & CABINET PARTS

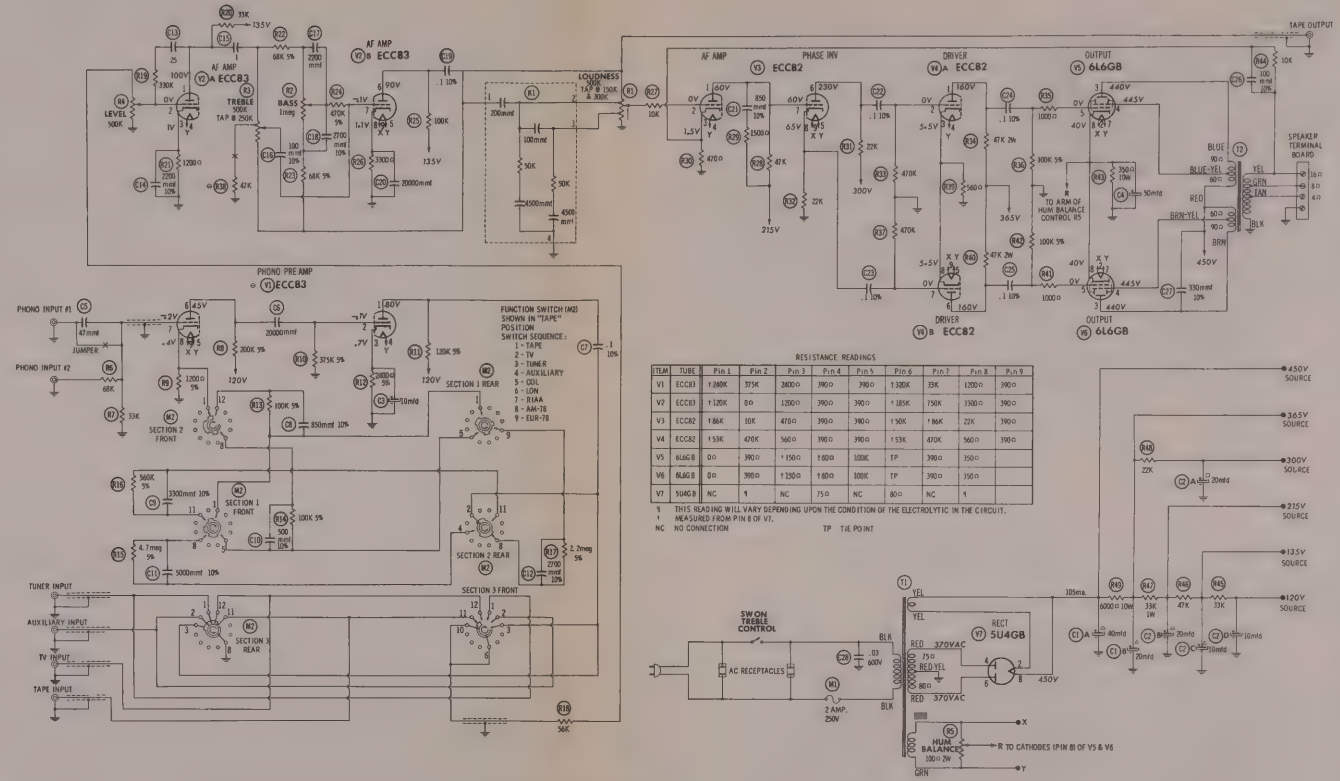
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	53007	Round
Knob	53008	Round With 1/2" Shank

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83	↑240K	375K	2600Ω	390Ω	390Ω	↑320K	33K	1200Ω	390Ω
V2	ECC83	↑120K	0Ω	1200Ω	390Ω	390Ω	↑185K	750K	3300Ω	390Ω
V3	ECC82	↑86K	10K	470Ω	390Ω	390Ω	↑50K	↑86K	22K	390Ω
V4	ECC82	↑53K	470K	560Ω	390Ω	390Ω	↑53K	470K	560Ω	390Ω
V5	6L6GB	0Ω	390Ω	↑150Ω	↑60Ω	100K	TP	390Ω	350Ω	
V6	6L6GB	0Ω	390Ω	↑230Ω	↑60Ω	100K	TP	390Ω	350Ω	
V7	5U4GB	NC	¶	NC	750Ω	NC	80Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 8 OF V7.
NC NO CONNECTION TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960

EICO
MODEL HF-20

PHOTOFACT® Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

EMERSON MODELS 860B, 861B, 866B (Ch. 120340B)

EMERSON MODELS 860B, 861B, 866B (Ch. 120340B)

MODEL 866B

EMERSON MODELS 860B, 861B, 866B (Ch. 120340B)

TRADE NAME	Emerson Models 860B, 861B, 866B (Ch. 120340B)
MANUFACTURER	Emerson Radio & Phono Corp., 524 W. 23rd. Street, New York 11, N. Y.
TYPE SET	AC Operated 4 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles RATING 55 Watts, .52 Amp. @117 Volts AC

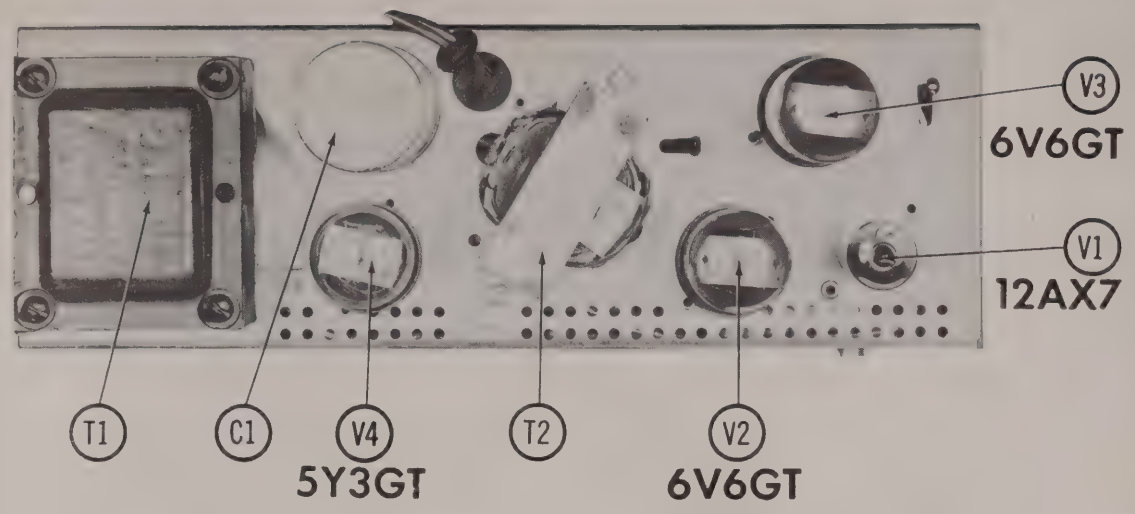
FOR SERVICE INFORMATION ON RECORD CHANGER PART #819107 — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

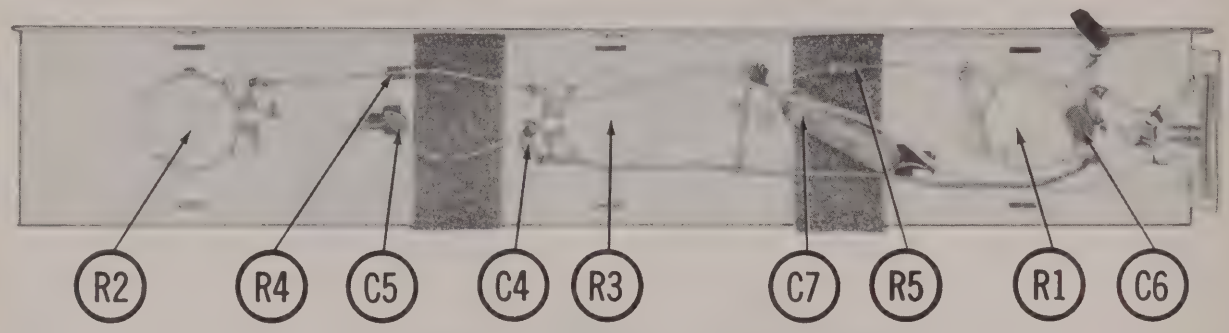
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JS569

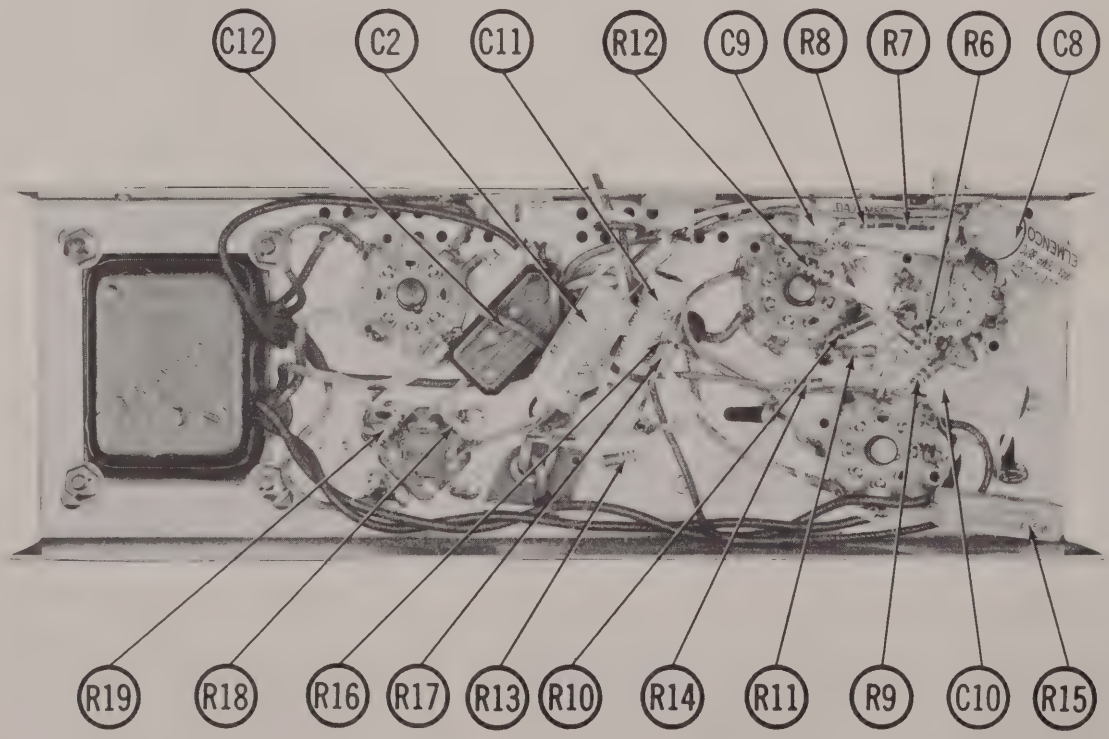
DATE 3 — 60 SET 479 FOLDER 6



CHASSIS - TOP VIEW



CONTROL PANEL - REAR VIEW



CHASSIS - BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	AF Amp. -Phase Inv.	12AX7	V3	Output	6V6GT
V2	Output	6V6GT	V4	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲25	400	925389	AFH4-57-75	C1036	FP367	TMT-141	TVL-3755	
B	■40	400			BR4045	TC78	TD-30-450	TVA-1711	
C	▲35	400							
D	100	25							
C2	25	25	925390	PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	
C3	4	15NP	925391	NP-PRS7405	BBR8-150 †	TCN504		TVAS-1402.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C5	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C6	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C7	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C8	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C9	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C10	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C11	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C12	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg 250K Tap	½	390457	BT-72	A47F-1meg	Q13-137X	UT-440	Loudness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	5meg	½	390458	B-88	A47-5meg-Z	Q13-141	U65	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3	1.5meg	½	390459					Treble

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	220K	
R5	47K	
R6	470K	
R7	1000Ω	
R8	3300Ω	
R9	470K	

ITEM No.	RATING	REMARKS
R10	5600Ω	
R11	22K	
R12	470K	
R13	33K	
R14	470K	
R15	270Ω 5W	

ITEM No.	RATING	REMARKS
R16	100K	
R17	100K	Note 1
R18	68K	
R19	330Ω	

Note 1. Used in Model 866B only.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .52A	560V ⓐ .070A	5V ⓐ 2A	6.3V ⓐ 1.3A			730072	24R21	P-3052			24R21	R-9B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	8100Ω CT	6-8Ω	734145	22S88	A-3027	AU-606	A-3880	22S88	S-31A	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA EMERSON PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	180160 ①	6A1	① Models 860B, 866B
SP2	6"	PM	3-4Ω	180160 ①	6A1	② Models 861B
SP3	3½"	PM	12-14Ω	180158 ①		
	12"	PM		180159 ②		
	5"	PM		180161 ②		
	5"	PM		180161 ②		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA EMERSON PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1	961865	81-TB	Not Req.	56	Not Req			2T-S	N-2T-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA EMERSON PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M2	960827 †	W-75TPS or W-75DS †♦ or W-75TPD ♦	S-66 † or S-66SD †♦ or S-66DD ♦	† Jewel ♦ Diamond

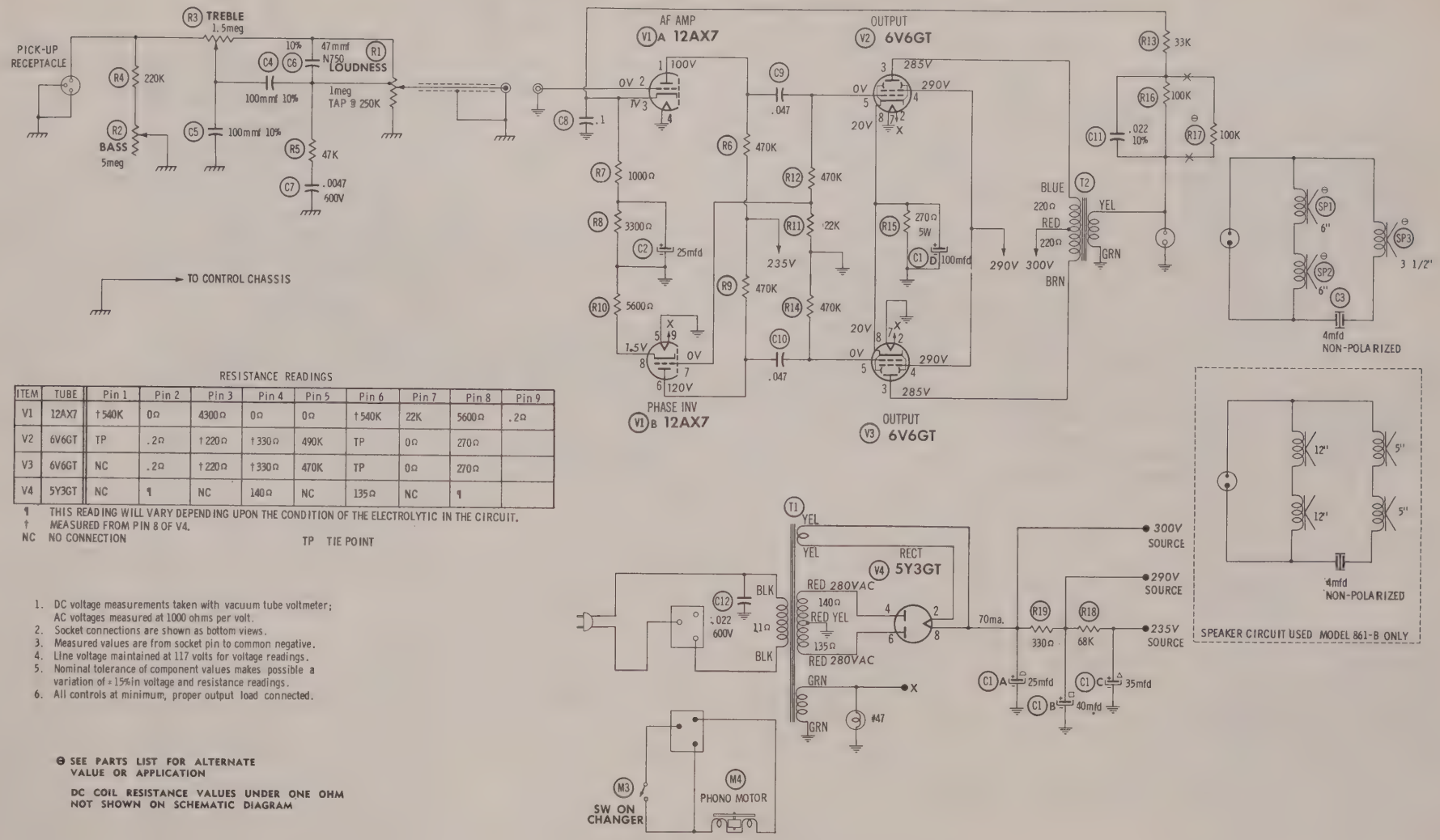
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M3	Switch		Off-On (Part Of Changer)
M4	Motor		Turntable Drive (Part of Changer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	460846	Loudness
Knob	460842	Bass, Treble
Knob	961842	Speed Control (Part Of Changer)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†540K	0Ω	4300Ω	0Ω	0Ω	†540K	22K	5600Ω	.2Ω
V2	6V6GT	TP	.2Ω	†220Ω	†330Ω	490K	TP	0Ω	270Ω	
V3	6V6GT	NC	.2Ω	†220Ω	†330Ω	470K	TP	0Ω	270Ω	
V4	5Y3GT	NC	¶	NC	140Ω	NC	135Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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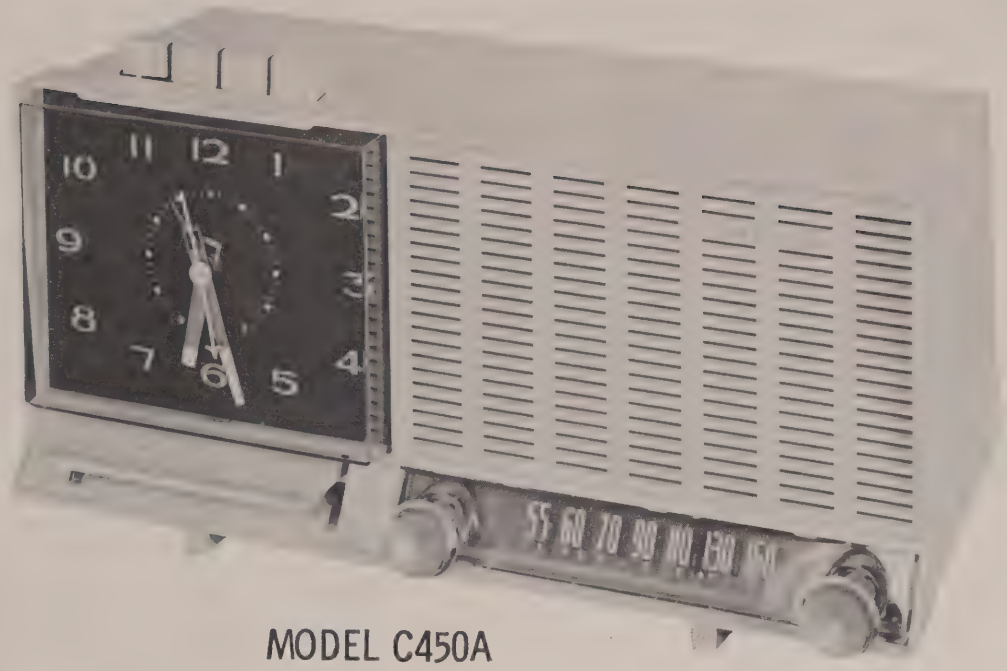
EMERSON MODELS 860B, 861B, 866B (Ch. 120340B)

PHOTOFACT® Folder with CIRCUITRACE®

GENERAL ELECTRIC
MODELS C450A, C450B, C451A, C451B, C452A, C452B, T140A, T141A

GENERAL ELECTRIC
MODELS C450A, C450B, C451A, C451B, C452A, C452B, T140A, T141A



MODEL C450A

GENERAL ELECTRIC
MODELS C450A, C450B, C451A, C451B, C452A, C452B, T140A, T141A

TRADE NAME	General Electric Models C450A, C450B, C451A, C451B, C452A, C452B, T140A, T141A
MANUFACTURER	General Electric Co., Products Service, Radio Receiver Dept., 869 Broad St., Utica, N. Y.
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock (Not Used On T140A, T141A)
POWER SUPPLY	110-120 Volts AC, 60 Cycles
RATING	25 Watts, .28 Amp. @117 Volts AC (Less Clock)
TUNING RANGE--BROADCAST	535 — 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544
A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	"	1500KC	Tune to 1500KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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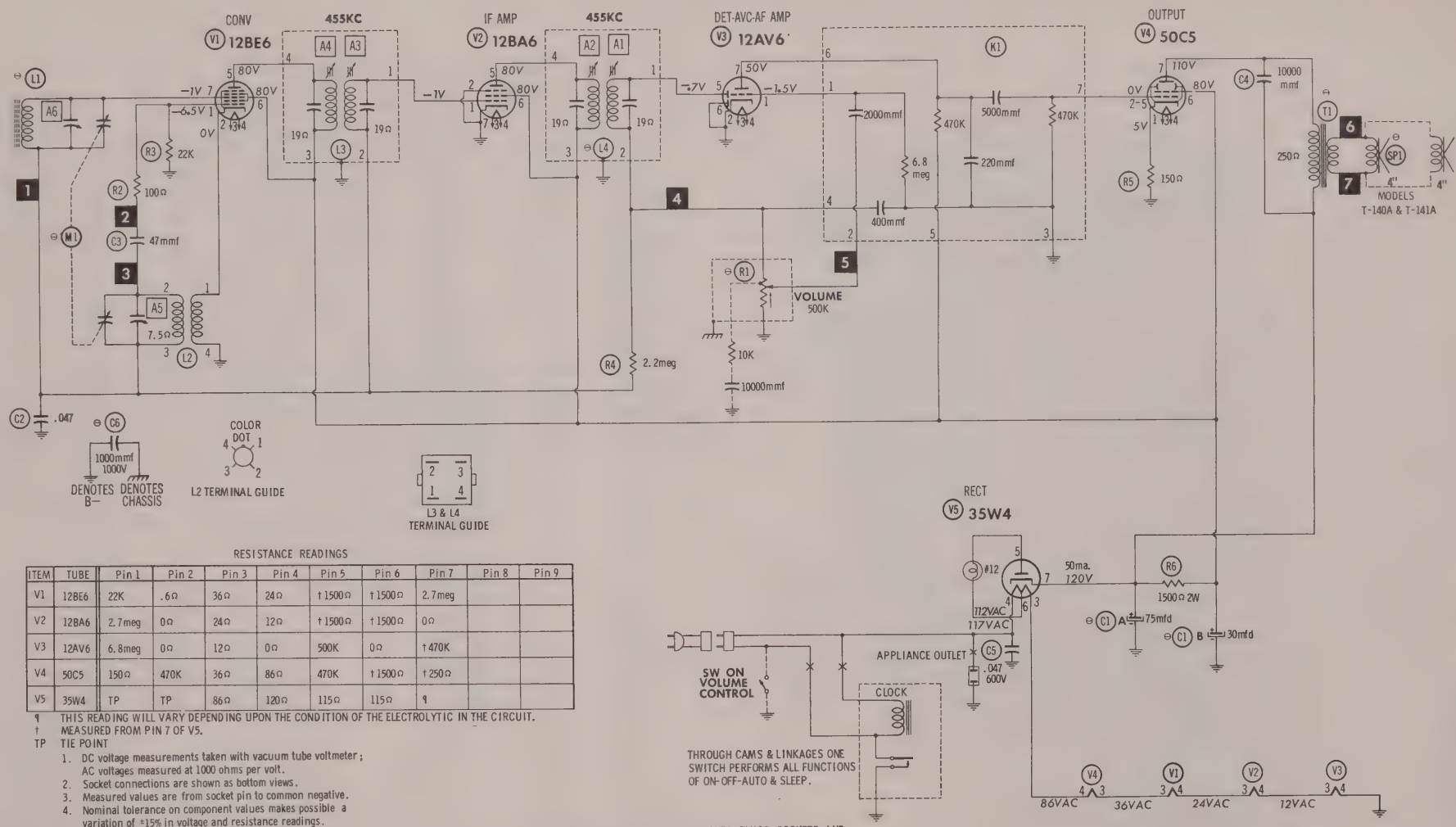
JG585

SET 479 FOLDER 7



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BE6	22K	.6Ω	36Ω	24Ω	†1500Ω	†1500Ω	2.7meg		
V2	12BA6	2.7meg	0Ω	24Ω	12Ω	†1500Ω	†1500Ω	0Ω		
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K		
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1500Ω	†250Ω		
V5	35W4	TP	TP	86Ω	120Ω	115Ω	115Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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GENERAL ELECTRIC
MODELS C450A, C450B, C451A, C451B, C452A, C452B, T140A, T141A

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS •	GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •

ITEM No.	USE	TYPE
V1	Converter	12BE6
V2	1 F Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	75	150	RS-2151 ①	PRS2230	BBRD8415	WD220	TDLD-10	TVA-2460	
B	30	150							

① Part #RS-2047 (50-30mfd) used in Models T140A, T141A.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C3	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C6	1000 1000V	Note 1	BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10

Note 1. Not used in Models T-140A & T-141A.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	RS-2176 ①	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

① Part #RS-2046 (with tap) used in Models T140A, T141A.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	100Ω	
R3	22K	
R4	2.2meg	
R5	150Ω	
R6	1500Ω 2W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA
K1	Audio Coupling	220mmf, 400mmf, 2000mmf, 5000mmf, 470K, 470K, 6.8meg	RS-2045	Sprague DT-12

COILS (RF-IF)

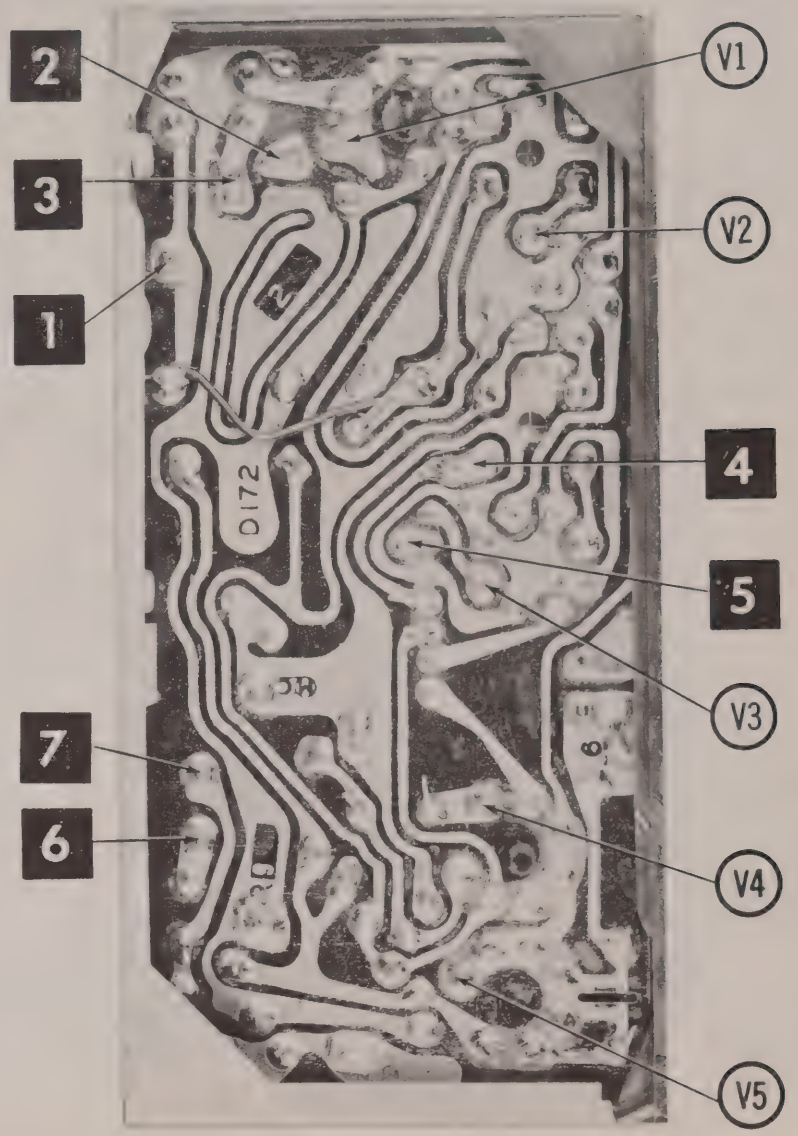
ITEM No.	USE	REPLACEMENT DATA						NOTES
		G. E. PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	RS-2167 †						
L2	Osc. Coil	RS-1437		*				
L3	Input IF	RS-1415	16-6780	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	RS-1416 *	16-6780	16-6780	BC-357	13-PC10	RF-4	

† Models T-140A, T-141A use part #RS-2043 in this application.
* Models T140A, T141A use Part #RS-1415 in this application.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



GENERAL ELECTRIC
MODELS C450A, C450B, C451A, C451B, C452A, C452B, T140A, T141A

FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	RS-1416 ①	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

① Models T140A, T141A uses Part #RS-2044.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G. E. PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	①RB1057	4A1	① Model C-450A, B; C-451, A, B; C-452, A, B
	4"	PM	3-4Ω	② RB-1110	4A07	② Models T-140A, T-141A

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M1	Tuning Cap.	RS-2175	2 Gang, Models C-450, A, B; C-451A, B; C452A, B
	Tuning Cap.	RS-2048	2 Gang, Models T140A, T141A

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

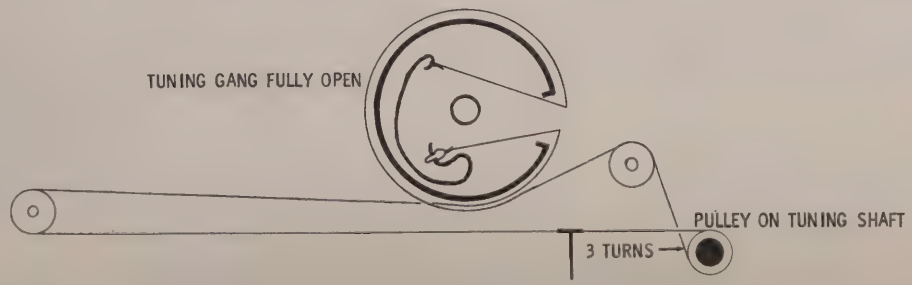
NAME	PART NO.	DESCRIPTION
Knob	RS-2040	Tuning, Volume; Models C-450A, B; C-451A, B; C452A, B
Knob	RS-2038	Tuning, Models T-140A, T-141A
Knob	RS-2040	Volume, Models T-140A, T-141A
Pushbutton	RS-2166	Models C-450A, B; C-451A, B; C-452A, B
Pointer	RS-2170	Models C-450A, B; C-451A, B; C-452A, B
Dial Crystal	RS-2162	Models C-450A, B; C-451A, B; C-452A, B
Clock Crystal	RS-2161	Models C-450A, B; C-451A, B; C-452A, B
Cabinet Front	RB-1119	Models C-450A, B; C-451A, B; C-452A, B
Cabinet Back	RB-1120	Models C-450A, B
Cabinet Back	RB-1121	Models C-451A, B
Cabinet Back	RB-1122	Models C-452A, B
Cabinet	RB-1108	Model T-140A
Cabinet	RB-1109	Model T-141A

WIRING DATA

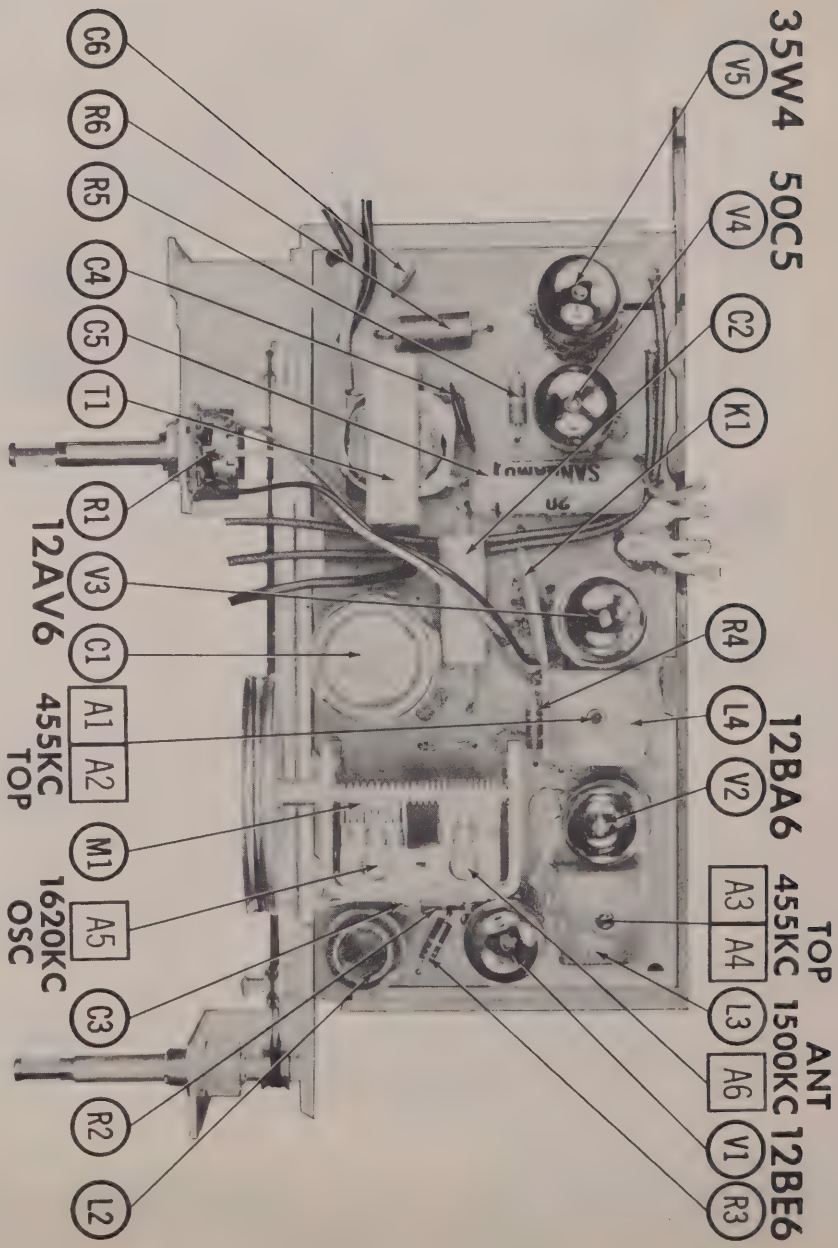
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

DIAL CORD STRINGING



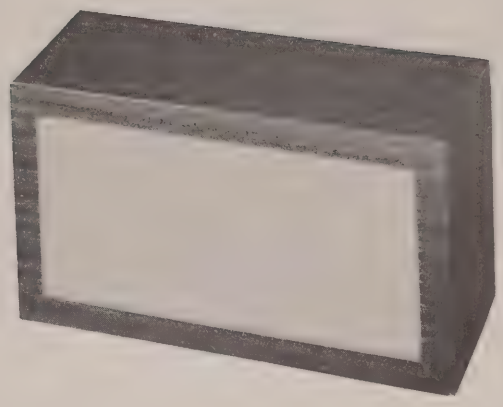
CHASSIS—TOP VIEW



PHOTOFACT® Folder

HALLMARK MODELS 811P, 812P, 813, 814, 815

HALLMARK MODELS 811P, 812P, 813, 814, 815



MODEL 813

HALLMARK MODELS 811P, 812P, 813, 814, 815

TRADE NAME	Hallmark Models 811P, 812P, 813, 814, 815
MANUFACTURER	Hallmark Electronics Corp., 383 Concord Ave., New York 54, N. Y.
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 100 Watts, .95 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR WEBCOR 172 — PHOTOFACT SET 447 FOLDER 13

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JT538

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	ECC83 (12AX7) *	V3	Channel 2 Output	EL84 (6BQ5) *
V2	Channel 1 Output	EL84 (6BQ5) *	V4	Rectifier	EZ81 (6CA4) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HALLMARK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	450			CO370	FP378	TMT-43	TVL-3793	
B	80	450			BR2045	TC75	TD-20-450	TVA-1709	
C	20	450							
D	20	450							
C2	4	25VNP		NP-PRS7405	BBR8-150 †	TCN504		TVAS-1402.1 *	
C3	4	25VNP		NP-PRS7405	BBR8-150 †	TCN504		TVAS-1402.1 *	

† Use 2 units Connect negative terminals together.
Connect positive terminals into circuit the same as the original non-polarized unit.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C5	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C6	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C7	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C8	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C9	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C10	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C11	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C12	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C13	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HALLMARK PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	802-5	B-76	A47-2meg-Z	Q13-139	U55	Volume, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	25K	½	802-6	B-26	A47-25K-S	Q11-120	U29	Tone, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	2meg	½	802-5	B-76	A47-2meg-Z	Q13-139	U55	Volume, Channel 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	25K	½	802-6	B-26	A47-25K-S	Q11-120	U29	Tone, Channel 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

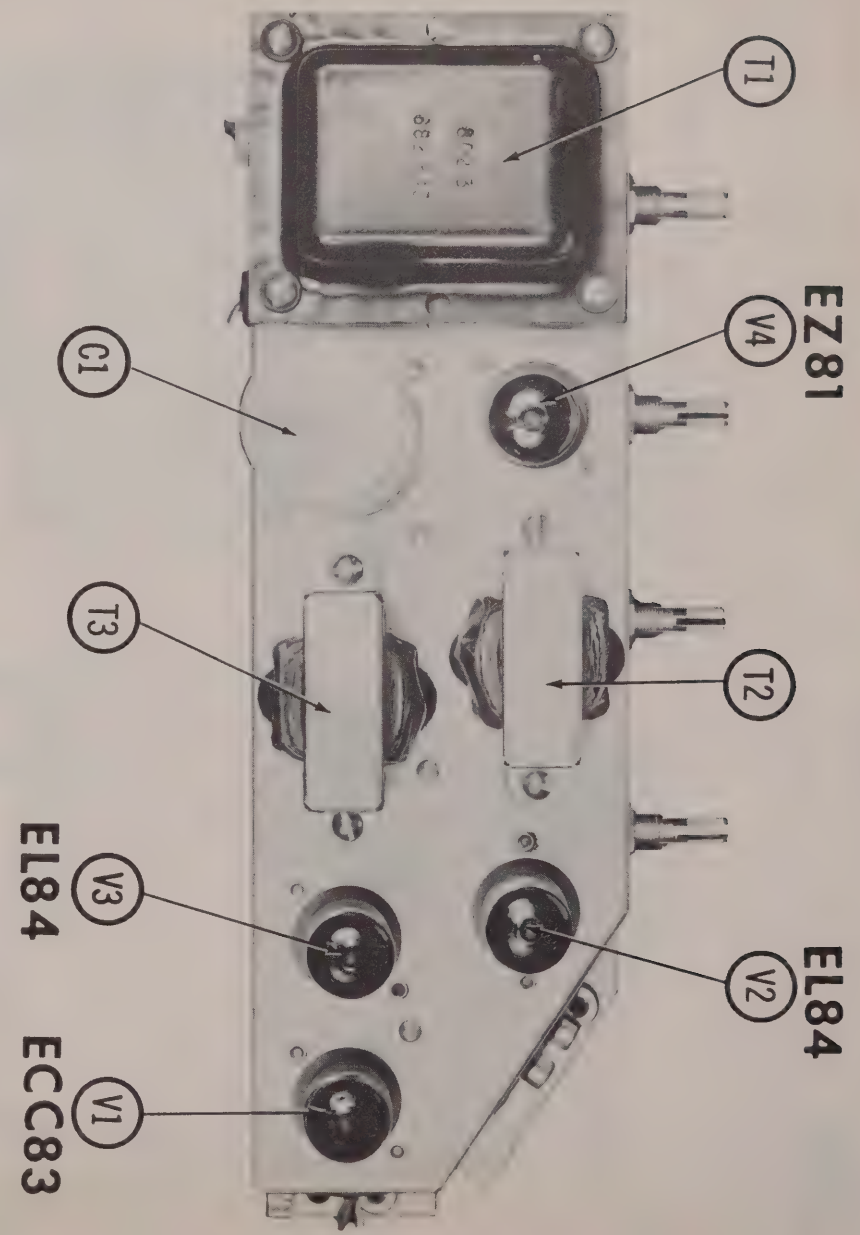
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	6.8meg	
R6	220K	
R7	1500Ω	
R8	470K	
R9	120Ω 2W	
R10	47K	

ITEM No.	RATING	REMARKS
R11	6.8meg	
R12	220K	
R13	1500Ω	
R14	470K	
R15	120Ω 2W	
R16	47K	

ITEM No.	RATING	REMARKS
R17	47K	
R18	4700Ω	
R19	2200Ω 1W	
R20	68Ω 1W	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	HALLMARK PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .95A	640 VCT @ .190A	6.3 VCT @ 2.4A	802-3						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HALLMARK PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4600Ω	500Ω Tap@ 8Ω	138-133-2							
T3	4600Ω	500Ω Tap@ 8Ω	138-133-2							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HALLMARK PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω		8A1	
SP2	3½"	PM	3-4Ω		3A15T	
SP3	8"	PM	3-4Ω		8A1	
SP4	3½"	PM	3-4Ω		3A15T	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	HALLMARK PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1		13TB	Not Req.	‡66	Not Req			8TA4-S	N-8TA-S

‡ Use Mount PT-3.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	HALLMARK PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2		W-107STSS † or W-107STDS ♦†	S-69X † or S-69XSD †♦ or S-69XDD ♦	† Jewel ♦ Diamond

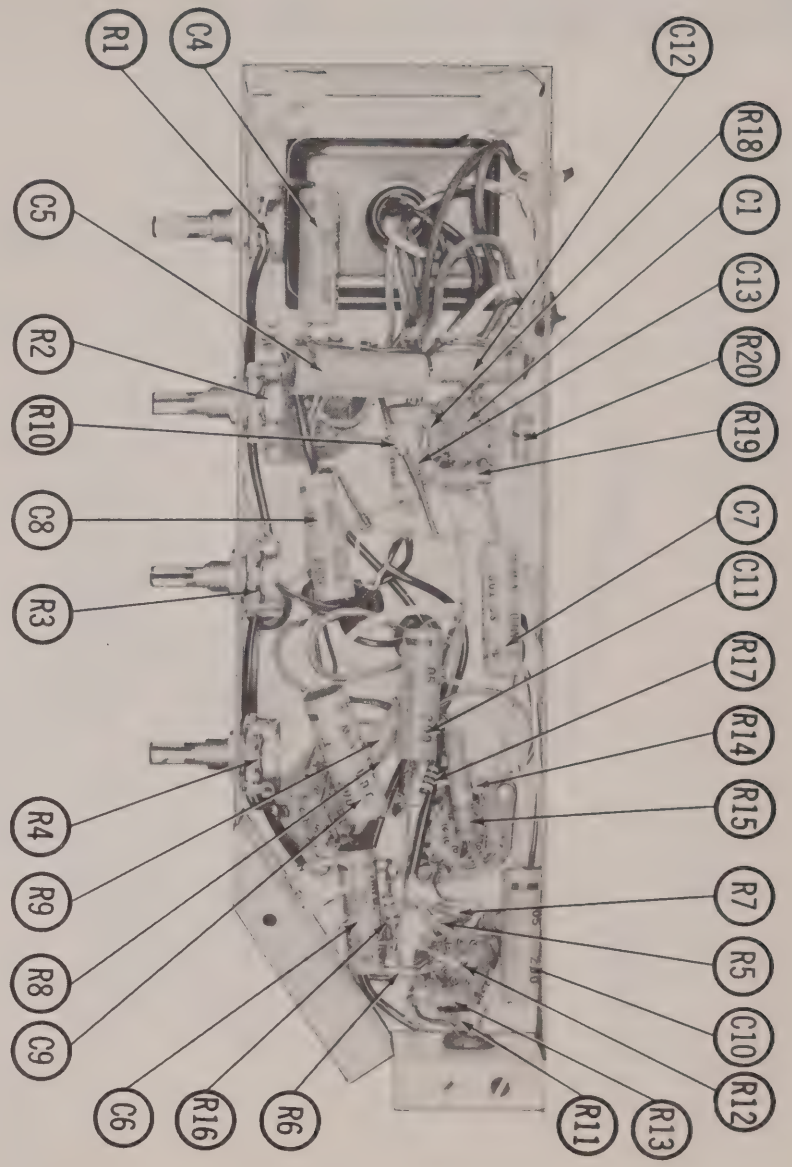
MISCELLANEOUS

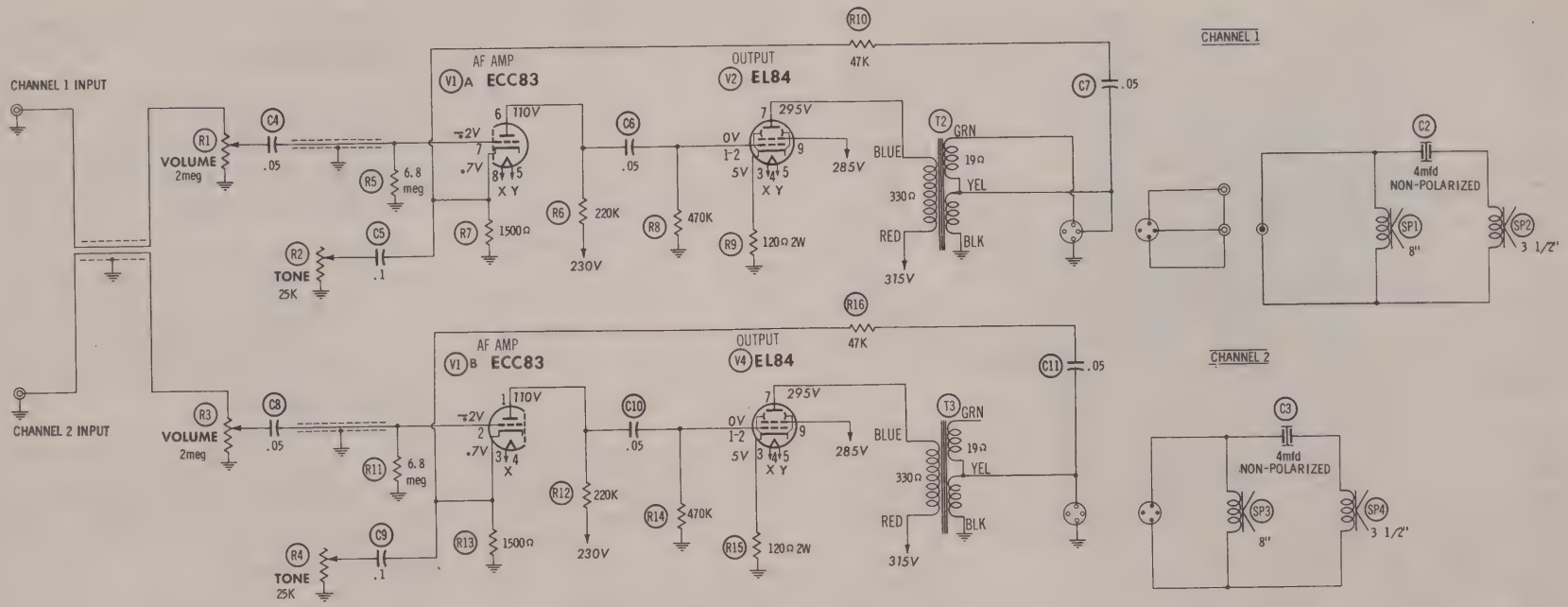
ITEM No.	PART NAME	HALLMARK PART No.	NOTES
M3	Switch		Off-On (Part of Changer)
M4	Motor		Phono Drive (Part of Changer)

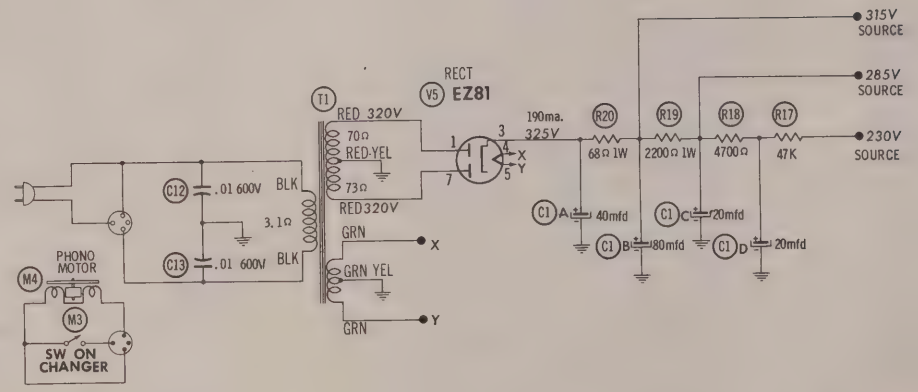
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83	†270K	6.8meg	1500Ω	.1Ω	.1Ω	†270K	6.8meg	1500Ω	.1Ω
V2	EL84	470K	470K	120Ω	.1Ω	.1Ω	NC	†400Ω	NC	†2300Ω
V3	EL84	470K	470K	120Ω	.1Ω	.1Ω	NC	†400Ω	NC	†2300Ω
V4	EZ81	70Ω	NC	¶	.1Ω	.1Ω	NC	73Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V4.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HALLMARK MODELS 811P, 812P, 813, 814, 815

PHOTOFACT® Folder

HARMAN-KARDON
MODEL TA-230

HARMAN-KARDON
MODEL TA-230

HARMAN-KARDON
MODEL TA-230

TRADE NAME	Harman-Kardon Model TA-230 (Stereo Festival)		
MANUFACTURER	Harman-Kardon, Inc., 520 Main Street, Westbury, L. I., N. Y.		
TYPE SET	AC Operated 20 Tube FM-AM Receiver With Stereo Output		
POWER SUPPLY	105-125 Volts AC, 60 Cycles	RATING	130 Watts, 1.5 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 530 - 1640KC	FREQ. MOD.	88 - 108MC

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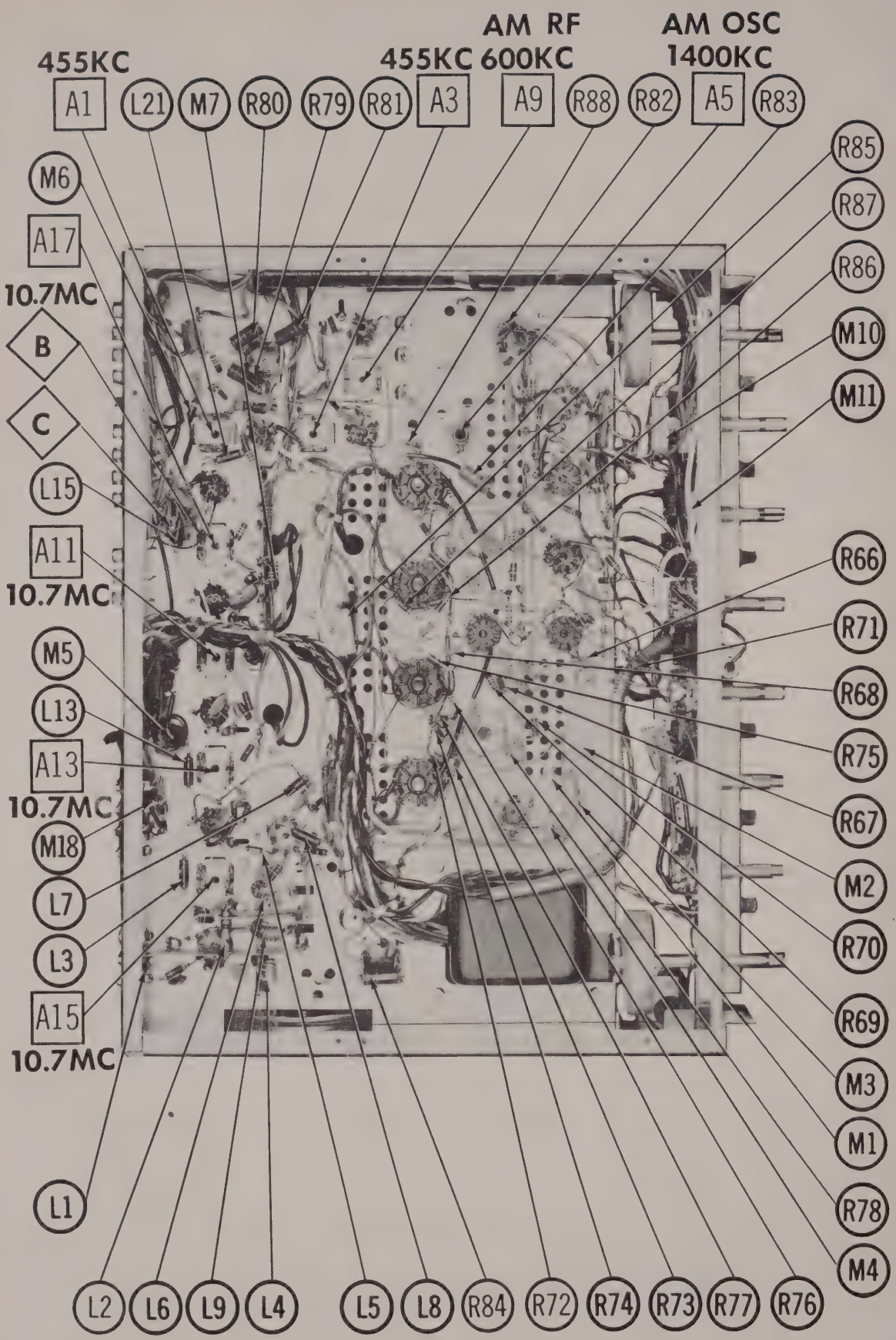
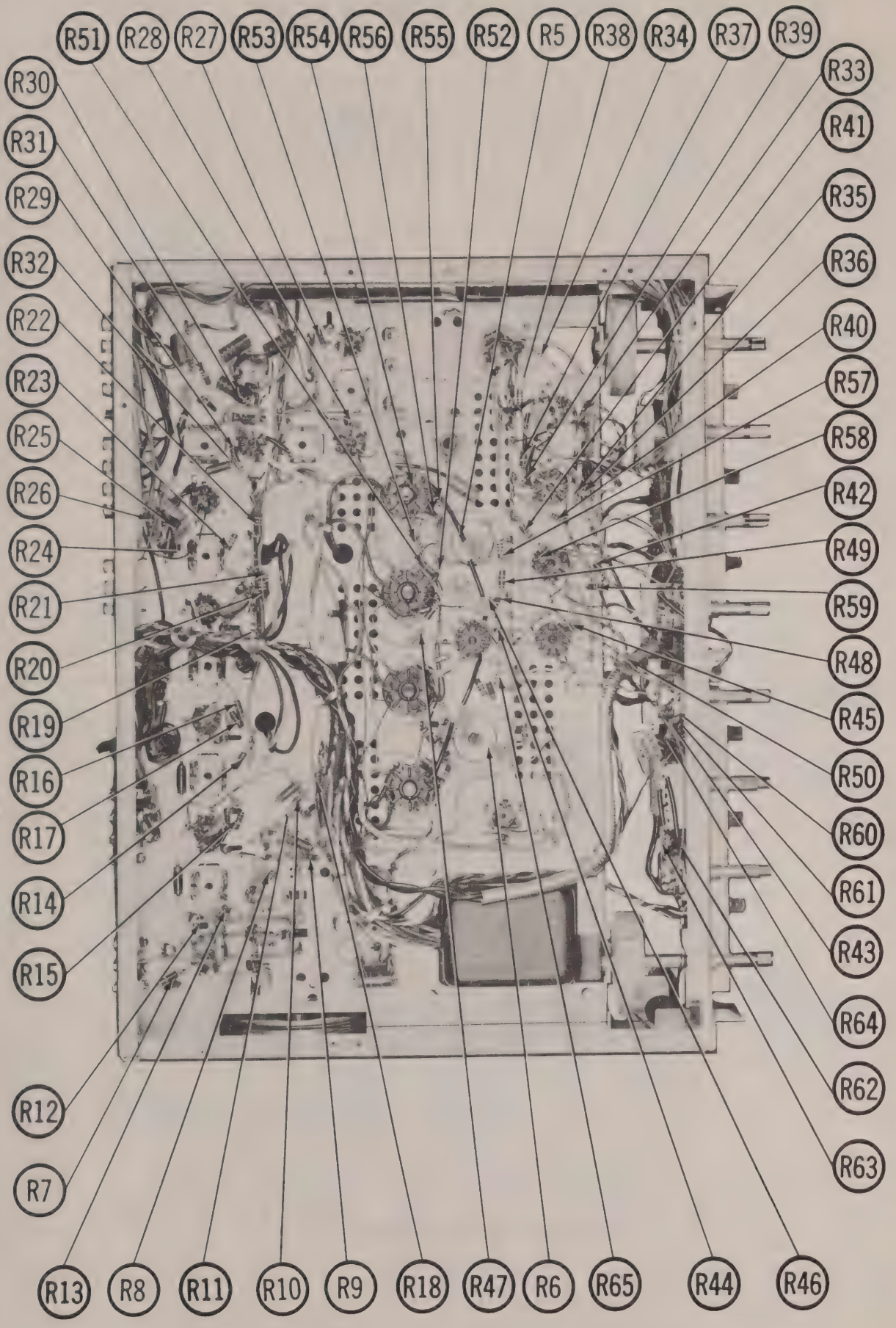
JL602

DATE 3-60 SET 479 FOLDER 9

SET 479 FOLDER 9



CHASSIS BOTTOM VIEW
ALIGNMENT, INDUCTOR, MISC. & RESISTOR (R66-R88) IDENT.



CHASSIS BOTTOM VIEW - RESISTOR (R5-R65) IDENT.

HARMAN-KARDON
MODEL TA-230

FOLDER 9

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4, A9, A11 thru A18	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A5, A6, A7, A19, A20, A21	GENERAL CEMENT #5097, 8727 WALSCO #2515
A8	GENERAL CEMENT #8282, 8606, 8606L, 9295 WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	(AM) Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru .1mfd to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6, A7	"
3.	"	600KC	600KC	"	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point (A). Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A17	"
6.	"	"	"	DC probe to point (C). Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC swp)	(FM) Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1.
5.	"	"	"	Vert. Amp. thru 27K to point (B). Low side to chassis.	A17	"
6.	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	106MC (Unmod.)	(FM) 106MC	DC probe to point (A). Common to chassis.	A19, A20, A21	Adjust for maximum deflection.
8.	"	90MC	90MC	"	L9, L6, L4	"

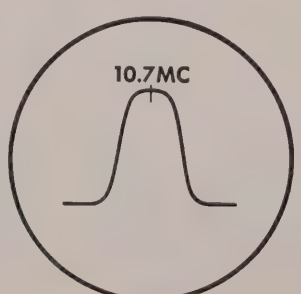


FIG. 1

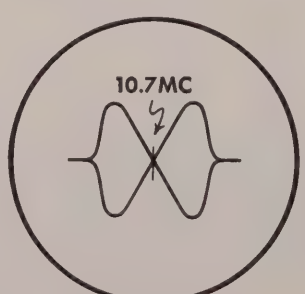
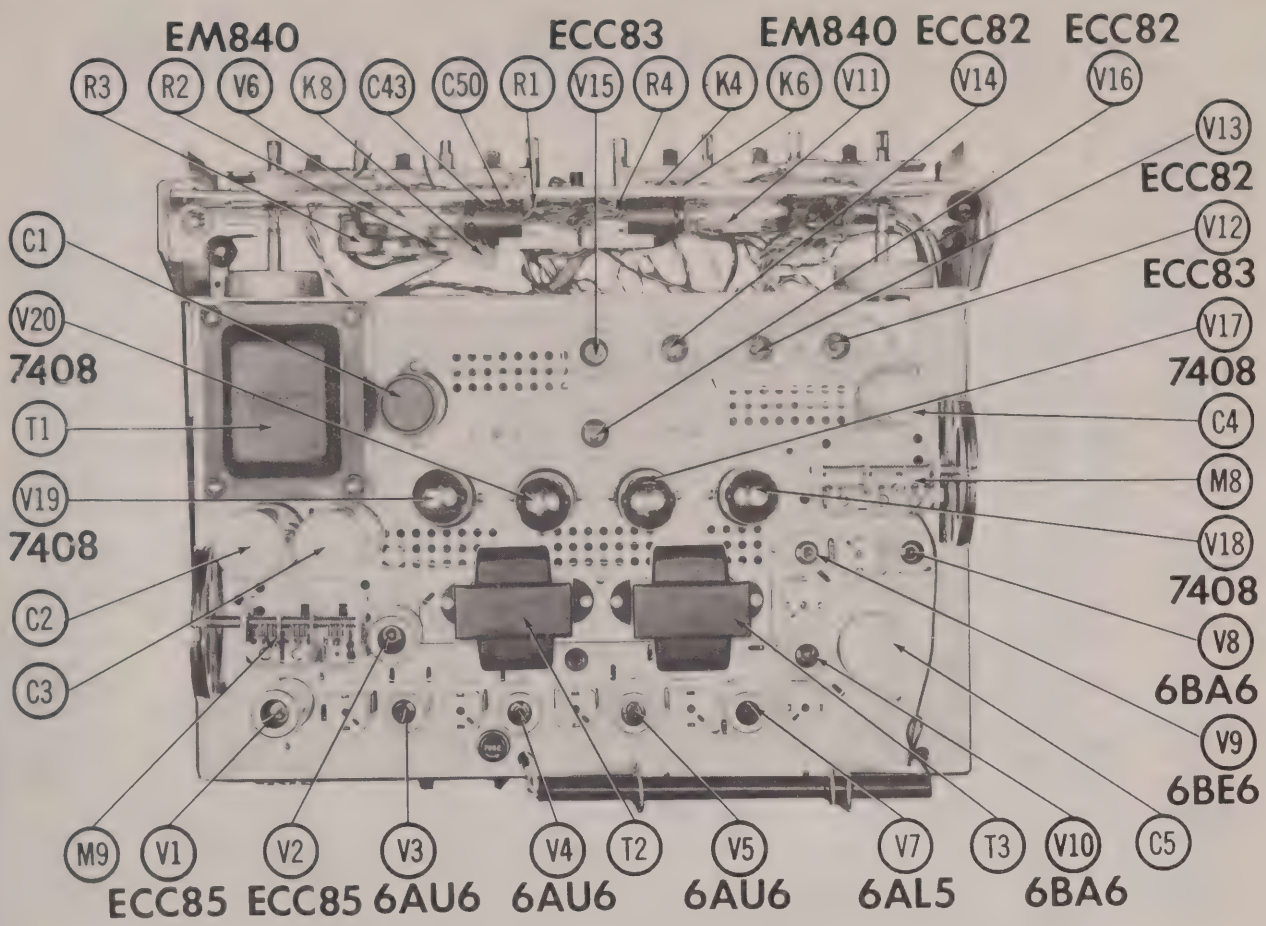
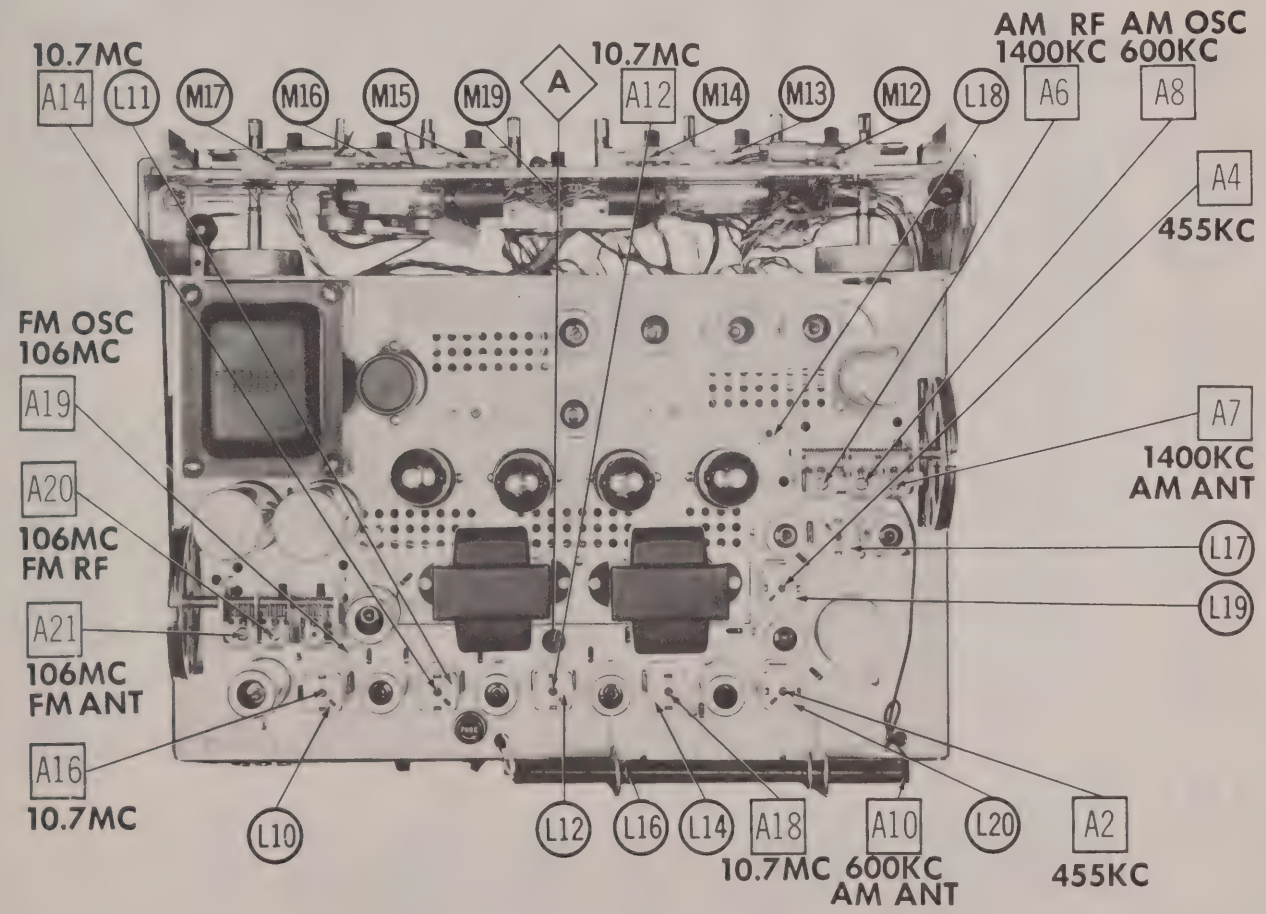
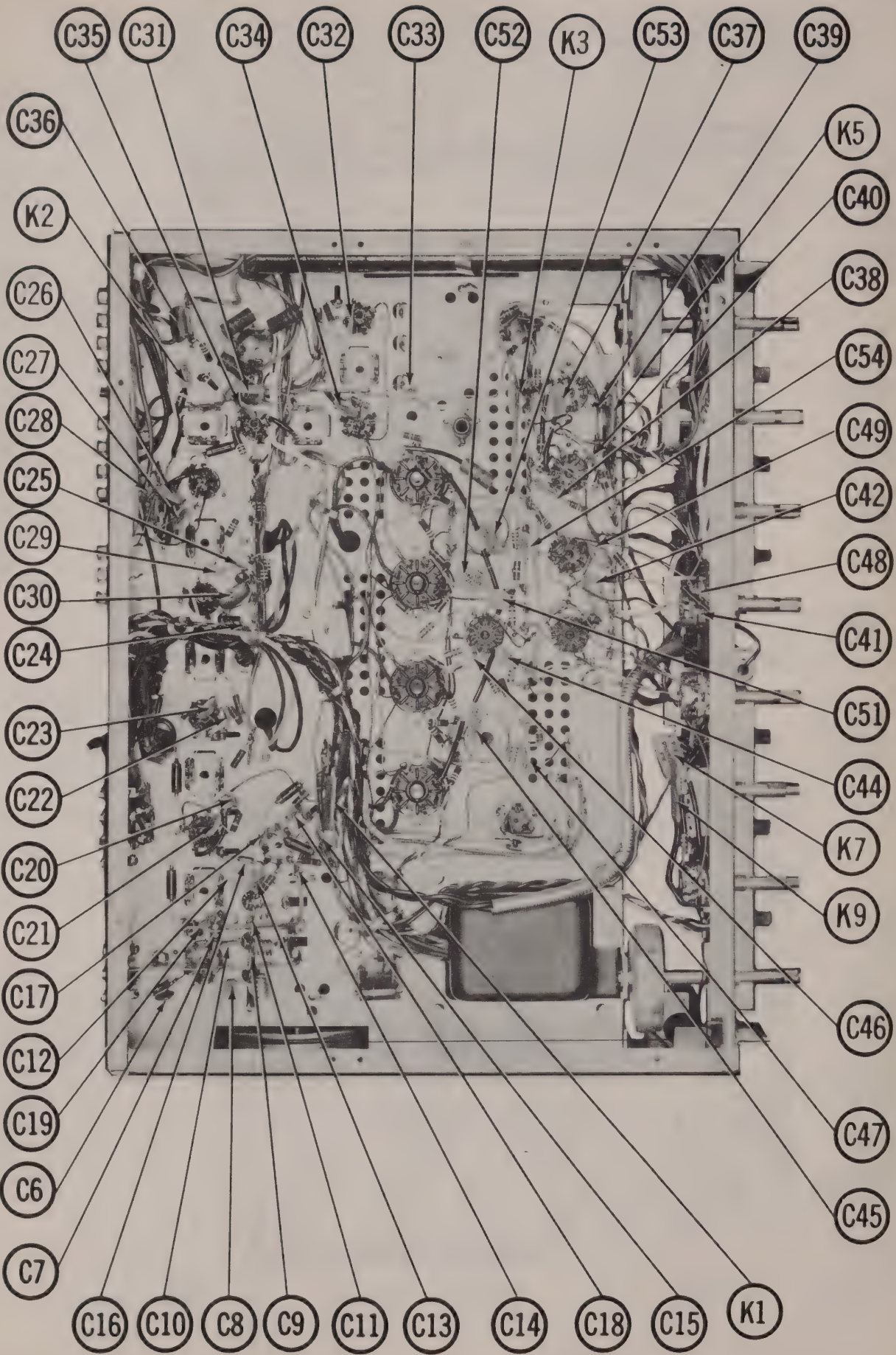


FIG. 2

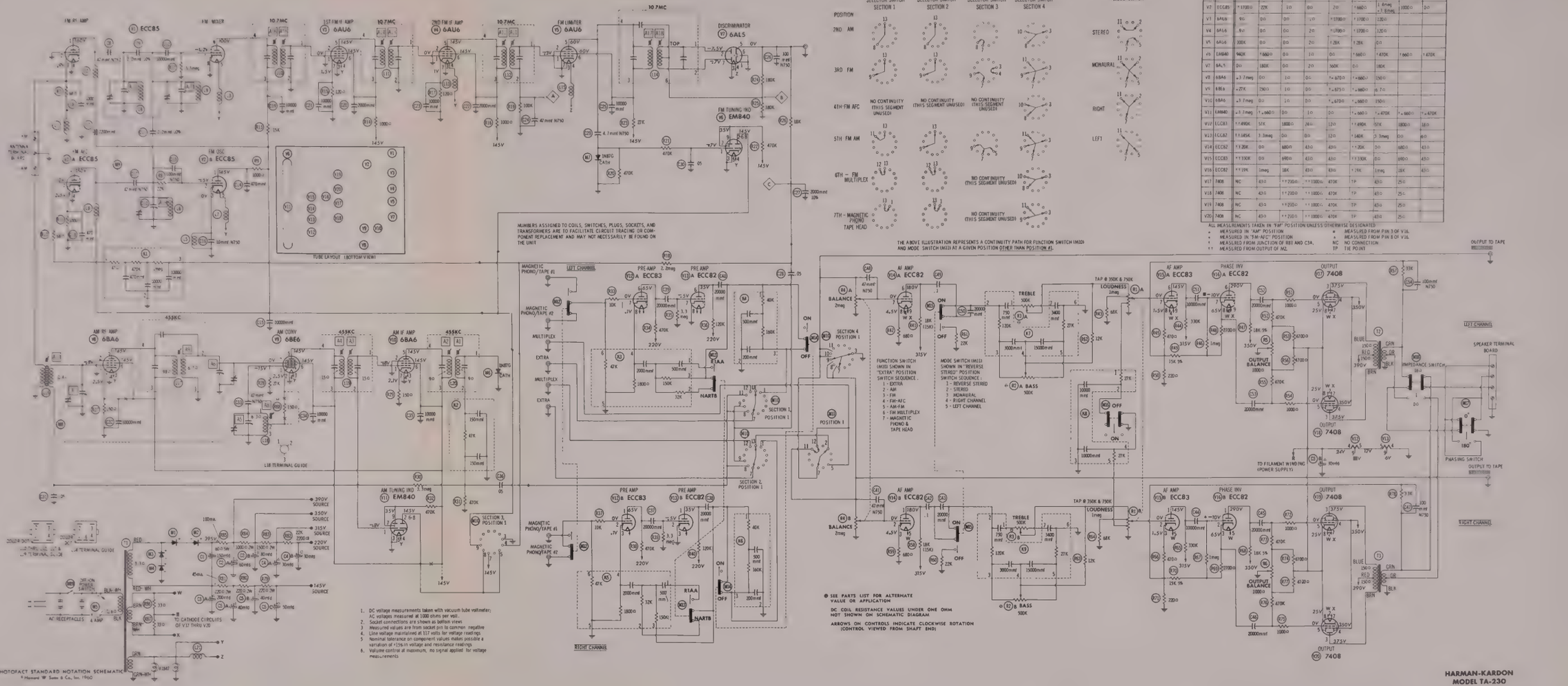




CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION


RESISTANCE READINGS
SELECTOR SWITCH SECTION 1
SELECTOR SWITCH SECTION 2
SELECTOR SWITCH SECTION 3
SELECTOR SWITCH SECTION 4
MODE SWITCH
POSITION
2ND AM
3RD FM
4TH-FM AFC
5TH FM AM
6TH – FM MULTIPLEX
7TH – MAGNETIC PHONO TAPE HEAD
STEREO
MONAURAL
RIGHT
LEFT
NO CONTINUITY (THIS SEGMENT UNUSED)
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
* MEASURED IN "AM" POSITION
** MEASURED IN "FM-AFC" POSITION
† MEASURED FROM JUNCTION OF R81 AND C3A.
†† MEASURED FROM OUTPUT OF M2.
# MEASURED FROM PIN 3 OF V16.
MEASURED FROM PIN 8 OF V16.
NC NO CONNECTION
TP TIE POINT
FM R.F. AMP
FM MIXER
FM OSC
1ST FM I.F. AMP
2ND FM I.F. AMP
FM LIMITER
DISCRIMINATOR
FM TUNING IND
AM R.F. AMP
AM MIXER
AM OSC
AM CONV
AM I.F. AMP
AM TUNING IND
TUBE LAYOUT (BOTTOM VIEW)
MAGNETIC PHONO/TAPE #1
MAGNETIC PHONO/TAPE #2
MULTIPLEX
EXTRA
PRE AMP
NARTB
R1AA
SECTION 1, POSITION 1
SECTION 2, POSITION 1
SECTION 3, POSITION 1
POSITION 1
LEFT CHANNEL
RIGHT CHANNEL
BALANCE
LOUDNESS
TREBLE
BASS
AF AMP
PHASE INV
OUTPUT
OUTPUT BALANCE
IMPEDANCE SWITCH
PHASING SWITCH
SPEAKER TERMINAL BOARD
OUTPUT TO TAPE
TO FILAMENT WINDING (POWER SUPPLY)
FUNCTION SWITCH (M10) SHOWN IN "EXTRA" POSITION
SWITCH SEQUENCE:
1 – EXTRA
2 – AM
3 – FM
4 – FM-AFC
5 – AM-FM
6 – FM MULTIPLEX
7 – MAGNETIC PHONO & TAPE HEAD
MODE SWITCH (M11) SHOWN IN "REVERSE STEREO" POSITION
SWITCH SEQUENCE:
1 – REVERSE STEREO
2 – STEREO
3 – MONAURAL
4 – RIGHT CHANNEL
5 – LEFT CHANNEL
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
THE ABOVE ILLUSTRATION REPRESENTS A CONTINUITY PATH FOR FUNCTION SWITCH (M10) AND MODE SWITCH (M11) AT A GIVEN POSITION OTHER THAN POSITION #1.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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HARMAN-KARDON
MODEL TA-230

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Mixer	ECC85 (6AQ8) *	V13	Left Channel Preamp. - Right Channel Preamp.	ECC82 (12AU7) *
V2	FM AFC - FM Osc.	ECC85 (6AQ8) *	V14	Left Channel AF Amp. - Right Channel AF Amp.	ECC82 (12AU7) *
V3	1st FM IF Amplifier	6AU6	V15	Left Channel AF Amp. - Right Channel AF Amp.	ECC83 (12AX7) *
V4	2nd FM IF Amplifier	6AU6	V16	Left Channel Phase Inv. - Right Channel Phase Inv.	ECC82 (12AU7) *
V5	FM Limiter	6AU6	V17	Left Channel Output	7408 (6V6GT) *
V6	FM Tuning Indicator	EM840	V18	Left Channel Output	7408 (6V6GT) *
V7	Discriminator	6AL5	V19	Right Channel Output	7408 (6V6GT) *
V8	AM RF Amplifier	6BA6	V20	Right Channel Output	7408 (6V6GT) *
V9	AM Converter	6BE6			
V10	AM IF Amplifier	6BA6			
V11	AM Tuning Indicator	EM840			
V12	Left Channel Preamp. - Right Channel Preamp.	ECC83 (12AX7) *			

CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Harman-Kardon PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	150	250	JE2783168					TVLS-1539 *	
C2A	▲60	400	JE2783172	AFH2-45-40	B0354	FP229.4	TMD-59	TVL-2677	
B	▲80	400							
C3A	▲200	250	JE2783169	AFH3-101-60	XA0318	FP217.74	TMS-75	TVL-2538	
B	▲200	50			BR20015		TD-200-150		
C4A	▲30	350	JE2763170	AFH2-39	B0310	FP227.3	TMD-37	TVL-2628	
B	■30	350							
C5A	▲40	200	JE2502988	AFH4-02-10	D0022	FP375.4	TMD-31	TVL-4580	
B	■40	200					TD-50-450		
C	▲50	200							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C7	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C8	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C9	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C11	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C12								
C13	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C14	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C16	10 N750		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C17	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C20	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C22	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C24	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C27	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C28	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C29	4.7 N750		N750-DI 4.7	DTN-4R7	C10V5U	CCTN-050	CN7-547	10TCU-V50
C30	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C31	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C33	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C36	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C37	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C38	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C39	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C40	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C41	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C42	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C43	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C45	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C46	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C47	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C48	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C49	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C50	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C52	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C53	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C54	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Harman-Kardon PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg *		RVCOM3368					Loudness, Left Channel
B	1meg *							Loudness, Right Channel
R2A	500K		RV2783209①					Bass, Left Channel
B	500K							Bass, Right Channel
R3A	500K		RV2783209①					Treble, Left Channel
B	500K							Treble, Right Channel
R4A	2meg		RV2783303	B-75	AD47-2meg-S		FA26L	Balance, Left Channel
B	2meg			SR-75	Not Req.		RU26L	Balance, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R5A	1000Ω		RV2783331			B11-108		Output Balance, Left Chan.
B	Shaft					TM4		
R6A	1000Ω		RV2783331			B11-108		Output Balance, Right Chan.
B	Shaft					TM4		

① Some versions may use Part #RV2783207.

* Taps ② 350K and 750K.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	68Ω	
R8	22K	
R9	1000Ω	
R10	68Ω	
R11	1000Ω	
R12	3.3meg	
R13	15K	
R14	1000Ω	
R15	120Ω	
R16	1000Ω	
R17	120Ω	
R18	2.2meg	
R19	100K	
R20	470K	
R21	470K	
R22	470K	
R23	27K	
R24	180K	
R25	180K	
R26	18K	
R27	150Ω	
R28	27K	
R29	150Ω	
R30	3.3meg	
R31	470K	
R32	470K	
R33	10K	
R34	470K	

ITEM No.	RATING	REMARKS
R35	3.3meg	
R36	120K	
R37	10K	
R38	470K	
R39	3.3meg	
R40	120K	
R41	18K	(15K) *
R42	680Ω	
R43	68K	
R44	330K	
R45	470Ω	
R46	1meg	
R47	18K 5%	
R48	2700Ω	
R49	15K 5%	
R50	220Ω	
R51	1000Ω	
R52	470K	
R53	4700Ω	
R54	1000Ω	
R55	470K	
R56	4700Ω	
R57	33K	
R58	18K	(15K) *
R59	680Ω	
R60	22K	
R61	22K	
R62	12K	

ITEM No.	RATING	REMARKS
R63	12K	
R64	68K	
R65	330K	
R66	470Ω	
R67	1meg	
R68	18K 5%	
R69	2700Ω	
R70	15K 5%	
R71	220Ω	
R72	1000Ω	
R73	470K	
R74	4700Ω	
R75	1000Ω	
R76	470K	
R77	4700Ω	
R78	33K	
R79	220Ω 2W	
R80	220Ω 2W	
R81	220Ω 2W	
R82	22K	(2200Ω) *
R83	1500Ω 2W	
R84	1000Ω 2W	
R85	60Ω 2W	
R86	33Ω	
R87	33Ω	
R88	150Ω	Note 1

* Alternate Value.

Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Harman-Kardon PART No.	REPLACEMENT DATA	
K1	FM AFC Filter	470mmf, 10000mmf, 10000mmf, 47Ω, 470K, 1meg	PCCOM3080	Sprague	V-21
K2	AM Det. RF Filter	150mmf, 150mmf, 47K	P781599	Aerovox Centralab Cornell-Dubilier Sprague	PA-98 PC-51 111TM2 D-2
K3	Equalization Compensator	500mmf, 2000mmf, 1800Ω, 32K, 47K, 150K	PCCOM3248	Sprague	TC-25
K4	Scratch Filter Comp.	200mmf, 500mmf, 40K, 160K	PC2783367	Sprague	TC-29
K5	Equalization Compensator	500mmf, 2000mmf, 1800Ω, 32K, 47K, 150K	PCCOM3248	Sprague	TC-25
K6	Scratch Filter Comp.	200mmf, 500mmf, 40K, 160K	PC2783367	Sprague	TC-29
K7	Tone Compensator	750mmf, 3000mmf, 3400mmf, 15000mmf, 27K, 120K	PC2492902	Sprague	TC-22
K8	Contour Compensator	(2) 10000mmf, (2) 27K	PC2783366	Sprague	TC-28
K9	Tone Compensator	750mmf, 3000mmf, 3400mmf, 15000mmf, 27K, 120K	PC2492902	Sprague	TC-22

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Harman-Kardon PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Antenna Coil		19-2003	19-2003		4584		.24uh
L2	RF Choke							3.3uh

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Harman-Kardon PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L3	Fil. Choke							3.3uh
L4	FM RF Coil							
L5	Cathode Choke		19-1000	19-1000	BC-561	4602		luh
L6	FM Osc. Coil							
L7	Fil. Choke							3.3uh
L8	RF Choke							3.3uh
L9	FM Mixer Coil							
L10	1st FM IF Trans.	GT2783362	16-3487	16-3487	FM-254	1463		
L11	2nd FM IF Trans.	GT2783363	16-3487	16-3487	FM-254	1463		
L12	3rd FM IF Trans.	GT2783362	16-3487	16-3487	FM-254	1463		
L13	Fil. Choke							3.3uh
L14	Discriminator	GT2503052	17-3494	17-3494	FM-253	1464		
L15	Fil. Choke							3.3uh
L16	Loopstick	GL2783330			BC-418 *			
L17	AM RF Trans.	GT2493012						
L18	AM Osc. Coil	GLCOM3011						
L19	1st AM IF Trans.	GT2493013	16-6758	16-6758	BC-352	12-C1	RF-1	
L20	2nd AM IF Trans.	GT2493014	16-6758	16-6758	BC-353	12-C2	RF-2	
L21	Fil. Choke							3.3uh

* Use original mounting brackets.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Harman-Kardon PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.5A	142V @ .740A	6.3V @ 3.9A	FT2783186B						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.7A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Harman-Kardon PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6500Ω CT	16Ω Tap @ 8Ω	FT2783187							
T3	6500Ω CT	16Ω Tap @ 8Ω	FT2783187							

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Harman-Kardon PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.100A	Z2382924 ①	5E4 ①	HA154 ①	40K ①	SR500 ①	① Silicon Type
M2	.100A	Z2382924 ①	5E4 ①	HA154 ①	40K ①	SR500 ①	
M3	.100A	Z2382924 ①	5E4 ①	HA154 ①	40K ①	SR500 ①	
M4	.100A	Z2382924 ①	5E4 ①	HA154 ①	40K ①	SR500 ①	

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Harman-Kardon PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	3AG	4A 250V	ZCOM3299	HC33901	312004 (3AG 4A 250V)	342601	MTH 4	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Harman-Kardon PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M6	1N87G		1N60	1N60	1N60	AM Detector (Pigtail)
M7	1N87G		1N60	1N60	1N60	Tuning Ind. Rectifier (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Harman-Kardon PART No.	NOTES
M8	Tuning Cap.	JV2783183	AM, 3 Gang (Ant. 11-262mmf, RF 60-395mmf, Osc. 17-105mmf)
M9	Tuning Cap.	JV2783184	FM, 3 Gang
M10	Switch	ER2783175	Function
M11	Switch	ER2783305	Mode
M12	Switch		Magnetic Input #1 - #2 (DPDT, Slide Type)
M13	Switch		Equalization (DPDT, Slide Type)
M14	Switch		Scratch Filter, Off-On (DPDT, Slide Type)
M15	Switch		Rumble Filter, Off-On (DPDT, Slide Type)
M16	Switch		Loudness Contour, Off-On (DPDT, Slide Type)
M17	Switch		Phasing, 180 - 0
M18	Switch		Impedance, 16Ω - 8Ω (DPDT, Slide Type)
M19	Switch	EP2783298	Power, Off-On (Pushbutton Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

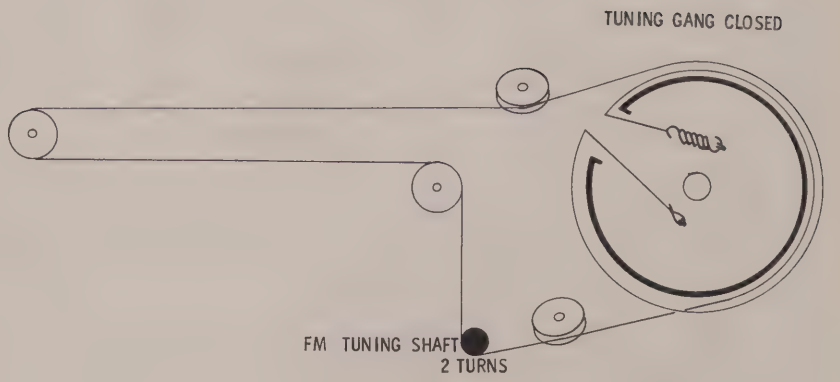
NAME	PART NO.	DESCRIPTION
Dial Glass	P2783196	

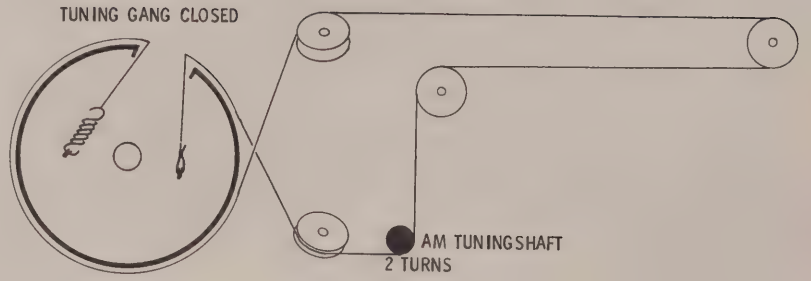
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING



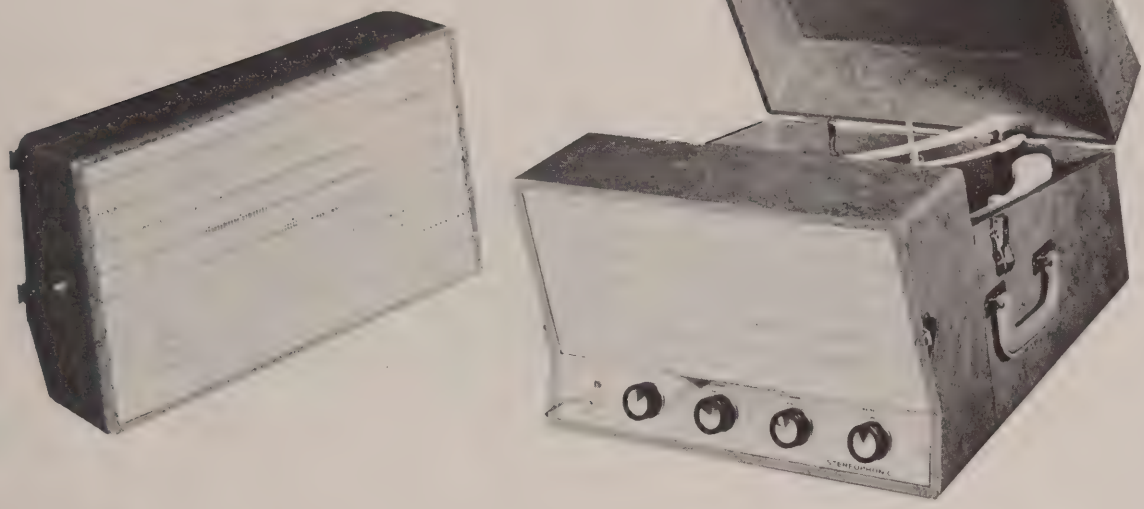


PHOTOFACT® Folder

EIA MEMBER

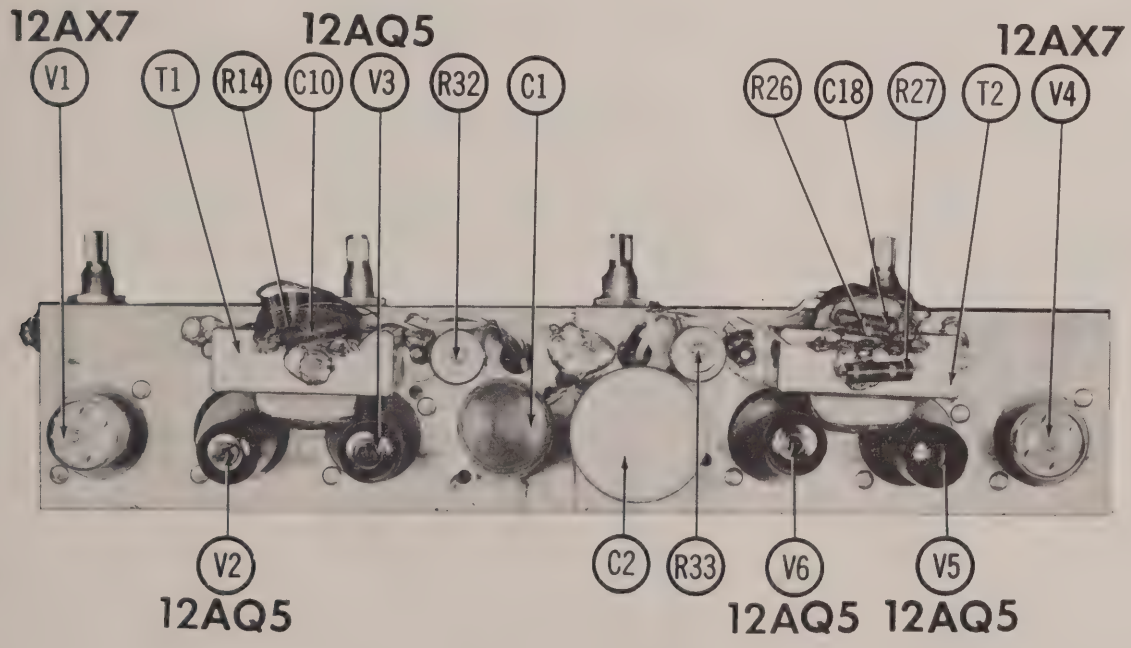
LAFAYETTE MODEL PH128

LAFAYETTE
MODEL PH128



TRADE NAME	Lafayette Model PH128
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC Operated 6 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 70 Watts, .7 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR GARRARD RC 121/MK II – PHOTOFACT SET 421 FOLDER 7



LAFAYETTE
MODEL PH128

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JT596

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆		GENERAL ELECTRIC ◆		RAYTHEON ◆		SYLVANIA ◆
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A AF Amp. - Phase Inverter	12AX7	V4	Channel B AF Amp. - Phase Inverter	12AX7
V2	Channel A Output	12AQ5	V5	Channel B Output	12AQ5
V3	Channel A Output	12AQ5	V6	Channel B Output	12AQ5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS1510	BBRD5515	WD215	TDLD-9	TVA-2453	Note 1
B	50	150							
C2A	■80	400		AFH4-113-50		FP454.8		TVL-4802.8	
B	▲40	400							
C	▲10	475							
D	100	50							

Note 1. C1A, C1B may be a 100mfd unit in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.022 200V	Note 1	P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C4	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C5	10000 150V		BPD-01	DDM-103	BYA10S1	CCD-103	GP110	5HK-S10
C6	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C7	.03 400V		P488N-03	DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S3
C8	.03 400V		P488N-03	DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S3
C9	10000 150V		BPD-01	DDM-103	BYA10S1	CCD-103	GP110	5HK-S10
C10	1500		SI 1500	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C11	.022 200V	Note 1	P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C12	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C13	10000 150V		BPD-01	DDM-103	BYA10S1	CCD-103	GP110	5HK-S10
C14	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C15	.03 400V		P488N-03	DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S3
C16	.03 400V		P488N-03	DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S3
C17	10000 150V		BPD-01	DDM-103	BYA10S1	CCD-103	GP110	5HK-S10
C18	1500		SI 1500	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C19	.0082 100V		P288N-008	DD-822	CUB16D8	6DP-2-822	GEM-6282	6TM-D8

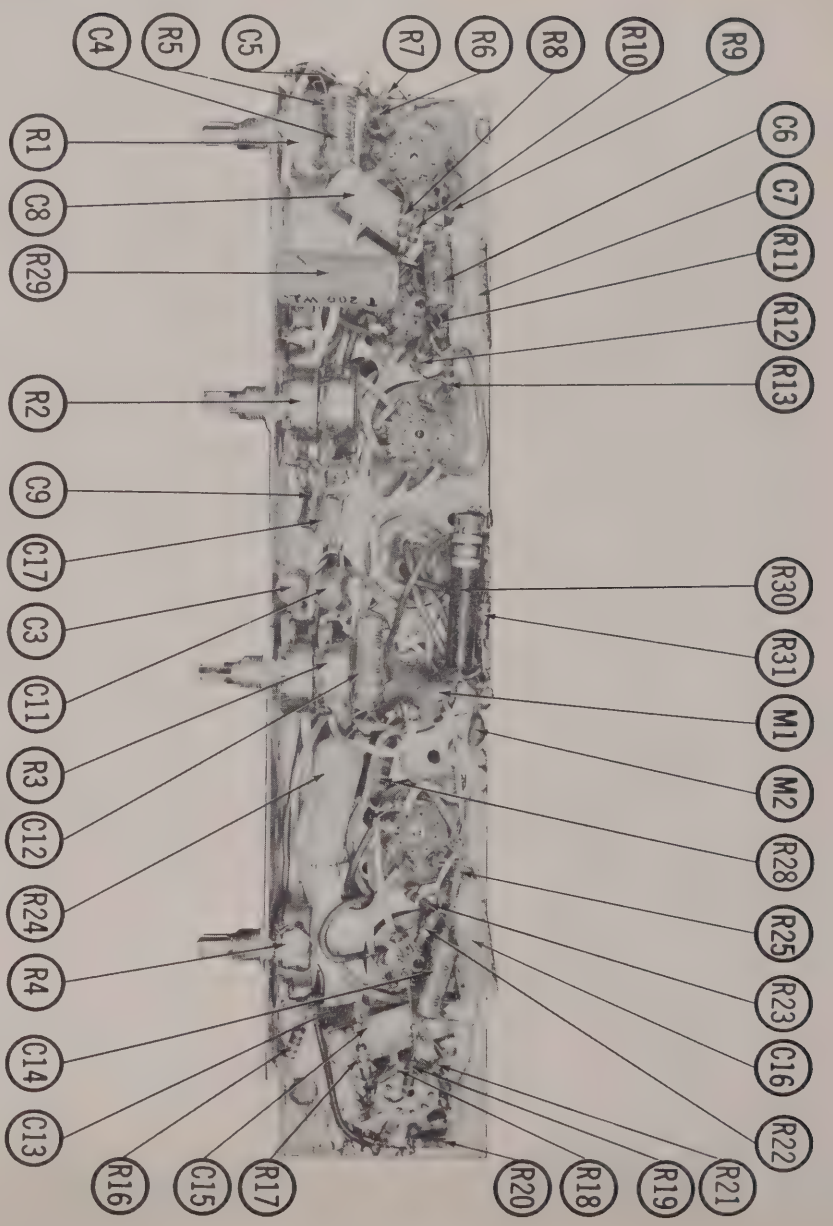
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	LAFAYETTE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	LT-1M	B-76	A47-2meg-Z	Q13-139	U55	Master Volume (Channel A)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1meg	½	BA811-2266	B-70	AD47-1meg-Z			Treble, Channel A
B	1meg	½		SR-70	Not Req.		■	Treble, Channel B
C	Shaft			Not Req.	KSS-3			
R3A	1meg	½	BA811-2266	B-70	AD47-1meg-Z			Bass, Channel A
B	1meg	½		SR-70	Not Req.		■	Bass, Channel B
C	Shaft			Not Req.	KSS-3			
R4A	2meg	½	LT-1M	B-76	A47-2meg-Z	Q13-139	U55	Remote Volume (Channel B)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

■ "STA-LOC" equivalent: FA16A, RU16A, CS3500.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	4700Ω	
R6	150K	
R7	5.6meg	(6.8meg) *
R8	150K	
R9	5.6meg	(6.8meg) *
R10	150K	
R11	150K	
R12	150K	
R13	150K	
R14	7500Ω	

ITEM No.	RATING	REMARKS
R15	3Ω	
R16	4700Ω	
R17	470K	(500K) *
R18	5.6meg	(6.8meg) *
R19	150K	
R20	5.6meg	(6.8meg) *
R21	150K	
R22	150K	
R23	150K	
R24	100Ω 5W	

ITEM No.	RATING	REMARKS
R25	150K	
R26	7500Ω	
R27	82Ω 5% 1W	(68Ω) *
R28	2200Ω 2W	
R29	200Ω 25W	(100Ω 5W) *
R30	6.8Ω 2W	
R31	100K	
R32	200Ω 25W	
R33	200Ω 25W	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	LAFAYETTE PART No.	REPLACEMENT DATA
K1	Phono Switch Shunt	.05mfd, 200Ω	(SFK 43/RG)	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	LAFAYETTE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5100Ω CT	6-8Ω	OT-158							
T2	6700Ω CT	6-8Ω								

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	LAFAYETTE PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω		4A1	
SP2	4"	PM	3-4Ω			

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	LAFAYETTE PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.140A	*	* SD500	* HA-504	* K200	* SR500	* Silicon Type
M2	.140A	*	* SD500	* HA-504	* K200	* SR500	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	LAFAYETTE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M3		86-TS	N7-7 N8-3	66 *	Not Req.			8TA4-S	N-8TA-S

* Use Mount PT-3.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

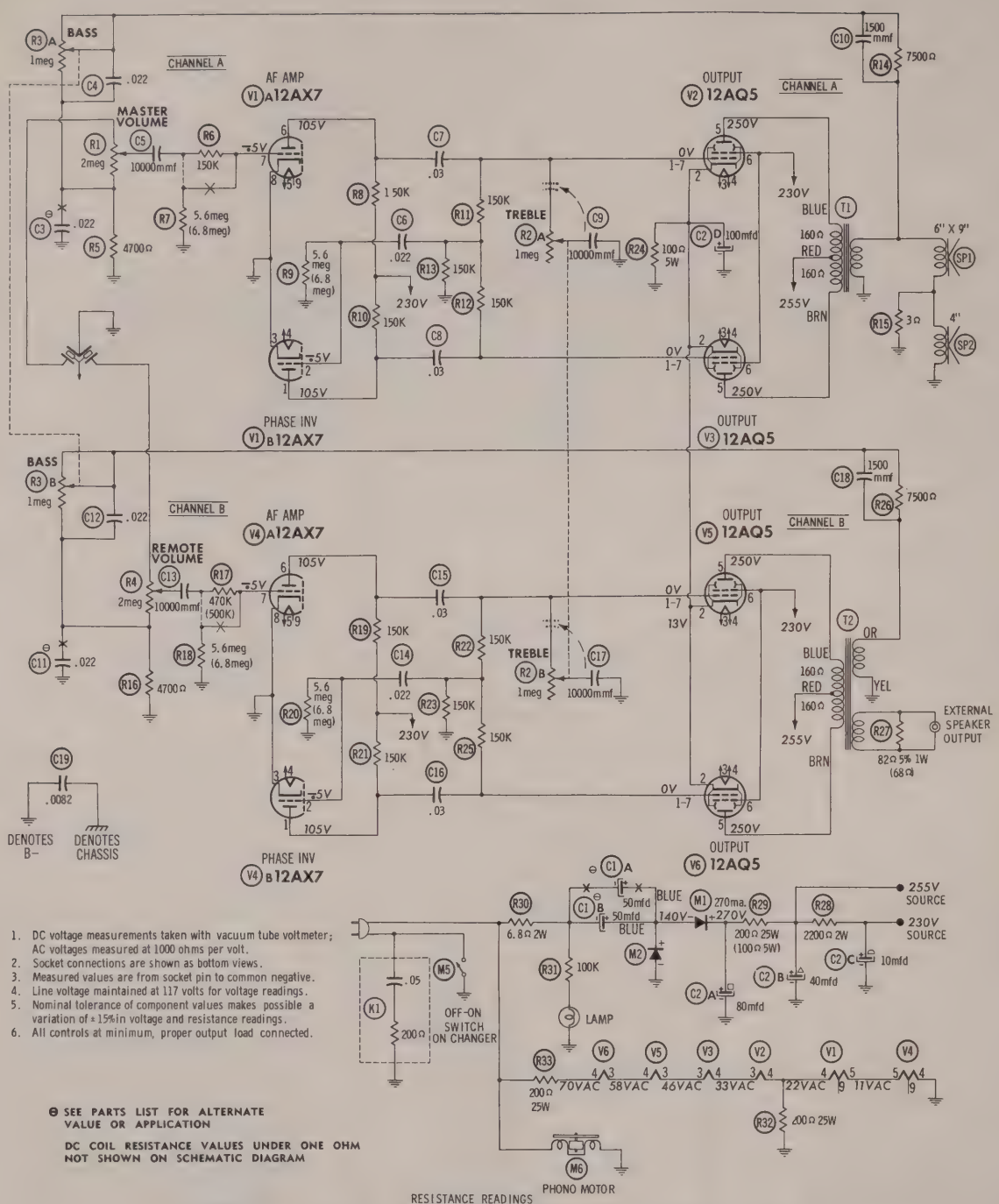
ITEM No.	REPLACEMENT DATA			REMARKS
	LAFAYETTE PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M4			* A-29X † or * A-29XSD †♦ or * A-29XDD ♦	† Jewel ♦ Diamond * Includes Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	LAFAYETTE PART No.	NOTES
M5	Switch		Off-On (Part of Changer)
M6	Motor		Turntable Drive (Part of Changer)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†150K	5.6meg	0Ω	24Ω	12Ω	†150K	5.6meg	0Ω	18Ω
V2	12AQ5	300K	100Ω	30Ω	24Ω	†360Ω	†2400Ω	300K		
V3	12AQ5	300K	100Ω	40Ω	30Ω	†360Ω	†2400Ω	300K		
V4	12AX7	†150K	5.6meg	0Ω	0Ω	12Ω	†150K	5.6meg	0Ω	6Ω
V5	12AQ5	300K	100Ω	40Ω	48Ω	†360Ω	†2400Ω	300K		
V6	12AQ5	300K	100Ω	48Ω	58Ω	†360Ω	†2400Ω	300K		

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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LAFAYETTE MODEL PH128

PHOTOFACT® Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

LESA
MODEL CD2/21 (Revised)

LESA
MODEL CD2/21 (Revised)

LESA
MODEL CD2/21 (Revised)

GENERAL INFORMATION

Lesa CD2/21 record changers play a stack of records automatically in sequence, and shut off after the last record has been played. In addition, the records can be played manually in any of the four speeds.

Any assortment of 7-, 10-, or 12-inch records -- provided they are all the same speed -- can be intermixed in any order.

A stack of 10-inch records with a 1 1/2-inch center hole can also be played and automatically changed when the 45-rpm automatic spindle (available as an accessory) is used.

After the last record has been played, the pickup arm returns to the rest post and automatically shuts off the changer.

The Lesa CD2/21 operates on 110 volts, 60 cycles AC.

Manufactured by:	Imported by:
Lesa -- S.p.A.	Lesa of America
Via Bergamo, 21	11 West 42nd Street
Milano, Italy	New York, N.Y.

This material compiled and published by

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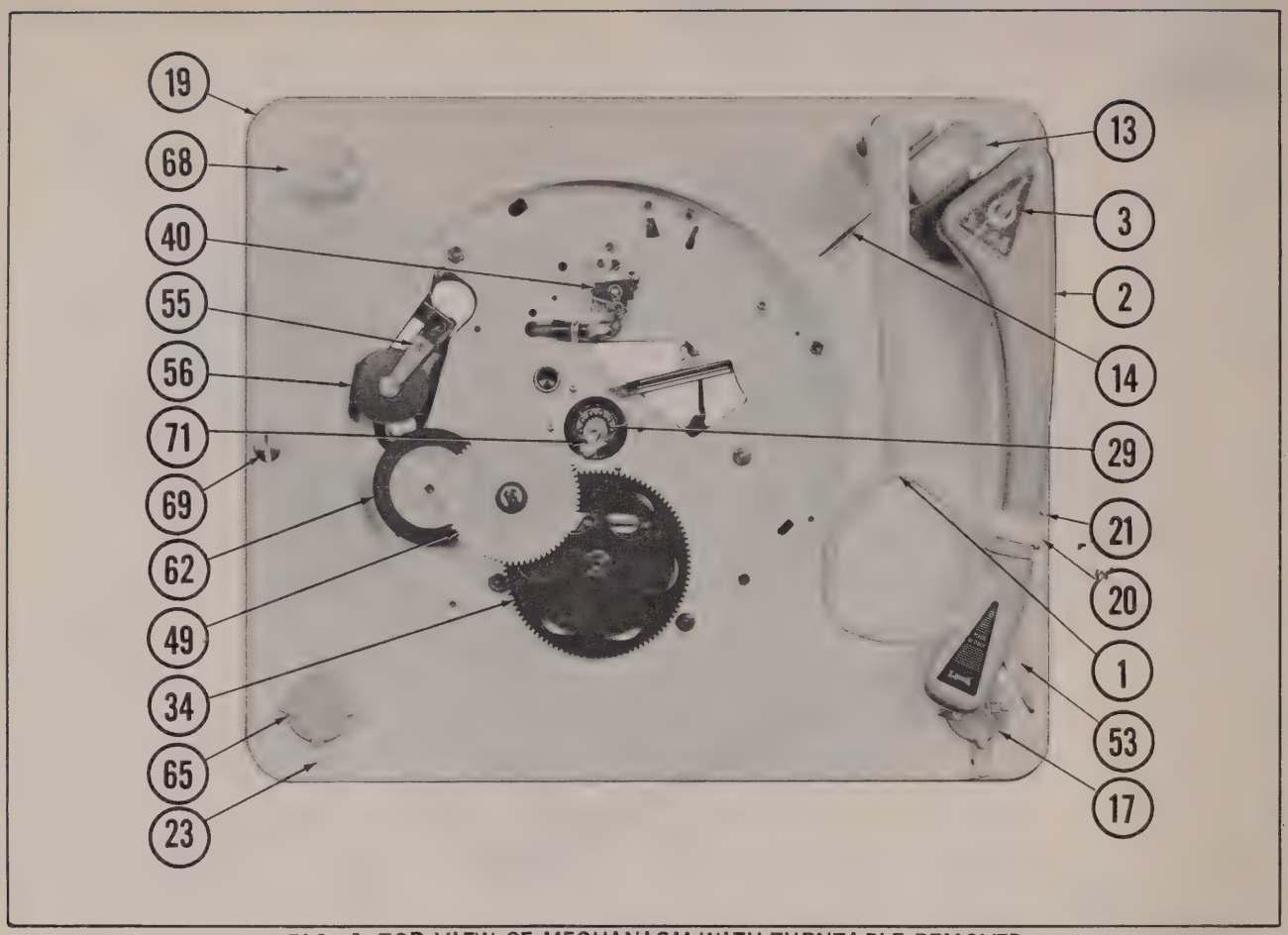


FIG. 1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

FUNCTIONS OF CONTROLS

Stop-On-Reject

This control turns the changer on and off, and rejects a record. To start the changer, turn the knob clockwise to the On-Rej. position and hold for a few seconds. To stop the changer, turn the knob until the pointer labeled Stop is in line with the mark on the baseplate. To reject a record, turn the control to the Rej. position and release.

Speed Change

Turning this control selects the desired speed for the record to be played.

OPERATING INSTRUCTIONS

Loading

Place no more than eight records of any size on the spindle, and gently lower them to the spindle shelf. The changer will automatically position the tone arm for the different sizes of records.

NOTE: Intermixed records must have the same speed and groove.

Starting

Before starting the changer, turn the Speed control to the speed corresponding to the records to be played, and release the safety latch on the tone arm. To start the changer, turn the Stop-On-Rej. control to the On-Rej. position and hold for a few seconds. The changer will operate automatically until the last record has been played. The tone arm will then return to its rest and automatically switch off the supply to the motor.

Rejecting

To reject a record at any time, turn the Stop-On-Rej. knob to the Rej. position and release.

To Use as a Manual Record Player

1. Lift the control arm and swing it outward to the right.

2. Place a record on the turntable.

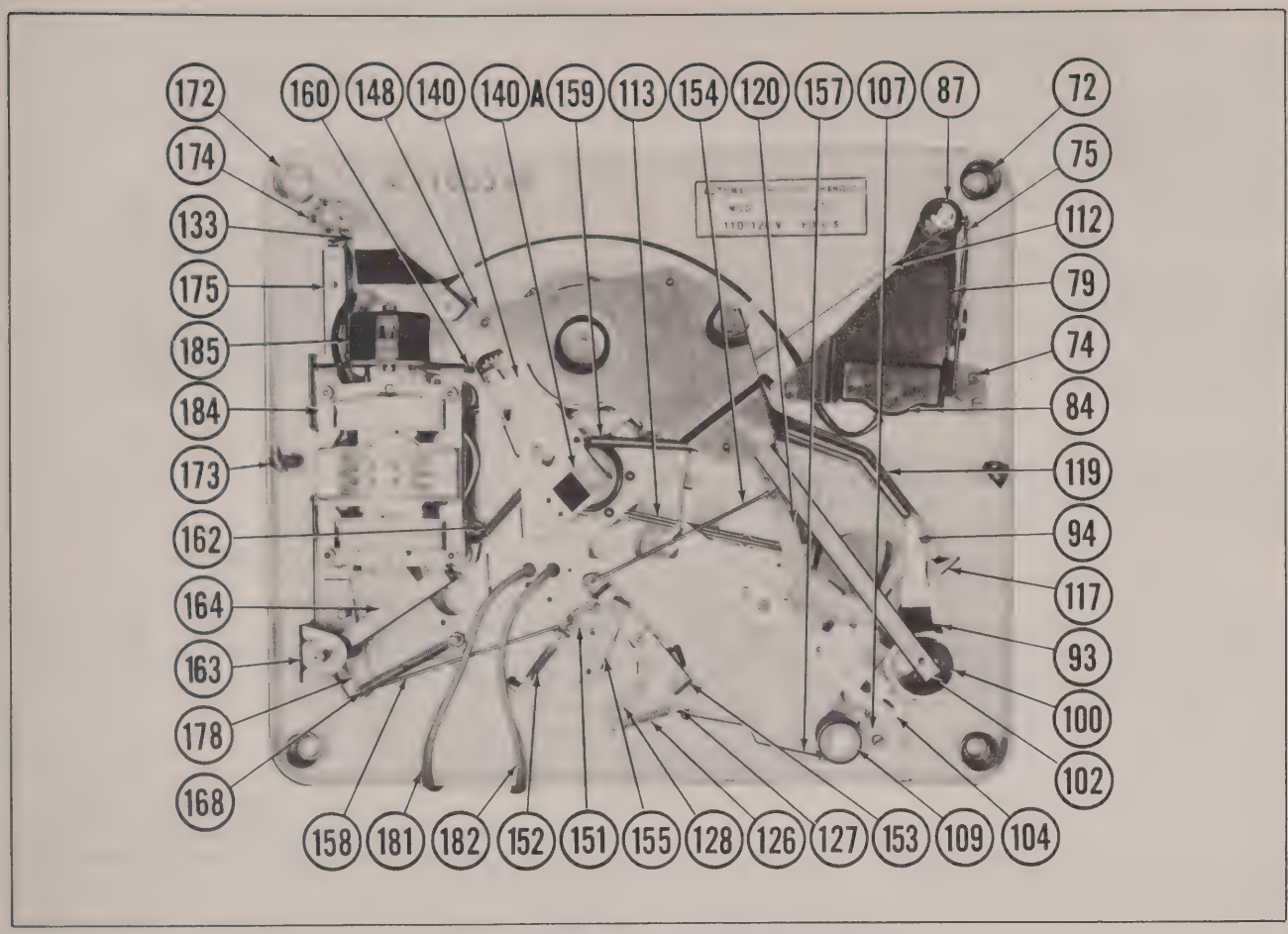


FIG. 2 BOTTOM VIEW OF MECHAMISM

3. Turn the Stop-On-Rej. control to the On position.

4. Place the tone arm on the record.

5. When the record has finished playing, the tone arm will return to its rest position and automatically shut off the changer.

To Play Records

Place not more than eight records of the same speed on the spindle. Turn the Speed Selector control to the corresponding speed. The record changer will play the records automatically and shut off after the last record has been played.

CHANGE CYCLE

The change cycle is started by the faster inward movement of the tone arm as the needle enters the lead-out groove at the end of the record.

The tone arm assembly and lever (93) are held together by friction. This friction rotates auto stop lever (113) until it contacts spring (28). Spring (28) is secured to the turntable and revolves with it. The inward movement of the tone arm, as it tracks along the groove of the record, is not fast enough to trip the mechanism. The reason is that spring (28) pushes lever (113) backward far enough for lever (93) to slip on the clutch.

The lead-out groove advances the tone arm rapidly toward the spindle. Spring (28) fails to push lever (113) backward because of the faster speed of the tone arm. Instead, spring (28) engages push lever (113) and actuates automatic control arm (132), which is turned by pull rod (112). The turning of automatic control arm (132) causes control wheel (56) to butt against the motor and to cycle the changer by means of gears (34) and (49).

As cams (134), (138), and (143) rotate, cam (143) actuates lever (102). Lever (102) pushes rod (98) upward. This raises the tone arm from the record. At the same time, lever (120) is actuated by cam (138), and swings the tone arm outward.

As cam (143) continues to rotate, record dropping lever (140) is pushed backward by a stud on cam (143). This action pulls the operating bar in the spindle inward, and a record drops onto the turntable.

As cam (134) rotates, lever (154) is actuated, and causes slide arm(104)to slide backward and to actuate finger (14). When a 7-inch record is dropped, finger (14)does not move. However, when a 10- or 12-inch record is dropped, finger (14) causes lever (15) to revolve around its boss and to actuate slide arm(104). This action presets the correct step against swing arm (119) for the inward movement of the tone arm.

As cams (134), (138), and (143) continue to rotate, swing arm (119) swings inward because of the tension applied by spring (141) against arm (94), and moves the tone arm over the record. At the same time, lever (102)rides down the detent on cam(143) and allows push rod (98) to set the needle down in the lead-in groove of the record.

The cams continue to rotate until the tab on arm (132) engages the locking arm on locking disc (37). This action locks the changer in the out-of-cycle position.

As soon as the last record has fallen, record balancing arm (1) drops below the shelf on the spindle. The record balancing arm shaft has two constrictions. When lever (106) swings into either constriction, hook arm (117) swings inward and locks lever (119). As a result, the tone arm will not swing inward, but will set down on its rest (22) and shut off the changer. At the same time, trip lever (127) of pawl (153) disengages rubber idler wheel (56) and shorts the pickup.

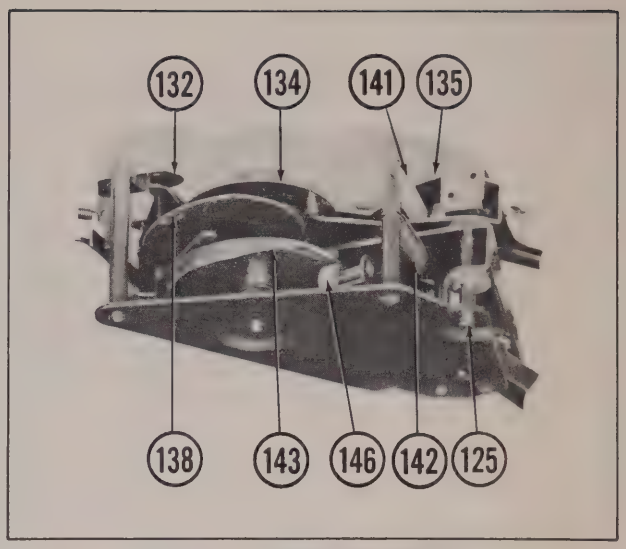


FIG. 3 CAM ASSEMBLY

TONE ARM HEIGHT ADJUSTMENT

The tone arm height is correct when the tip of the needle rises 5/64 inches above a stack of records 7/8 inch high. To adjust the height of the tone arm, turn hex head screw, which is under the tone arm and near the hinge. When properly adjusted, the tone arm should not touch the bottom record on the spindle. Nor should the tone arm touch the base plate if dropped past the edge of the record. Instead, it should stay halfway between the turntable and the base plate.

TROUBLE CHART

Symptom	Cause	Remedy
Wow	1. Turntable distorted, or foreign matter on inside of rim.	1. Replace turntable, or remove foreign matter from rim.
	2. Rubber mat not in place.	2. Rubber mat must be in place to prevent wobbling.
	3. Drive wheel (56) out of round.	3. Replace drive wheel (56).
	4. Center boss defective.	4. Replace center boss, so that the vertical travel will not exceed .004".
Slow or noisy turntable rotation.	1. Ball race (29) and washer incorrectly assembled.	1. Assemble ball bearing (29) and washer so that the turntable will have a small amount of end play when the circlip is in place.
	2. Defective ball bearing (29) damaged thrust-bearing washer, or ball wedged in thrust-bearing race.	2. Replace ball bearing (29) or thrust-bearing washer.
Background rumble.	1. Ball bearing (29) dirty, dry, or damaged.	1. Clean and lubricate ball bearing if dirty or dry. Replace if damaged.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
Low thumping sound.	1. Drive wheel (56) distorted.	1. Replace drive wheel (56).
	2. Rubber rim chipped or worn.	2. Replace rubber rim.
	3. Foreign matter adhering to rim.	3. Clean foreign matter from rim.
Turntable idler drive wheel rotates too slowly.	1. Spindle distorted.	1. Straighten or replace spindle.
	2. Ball opposite clamp (55) dry.	2. Clean and lubricate the ball.
Incorrect speed.	1. End of lever (175) not properly bent.	1. Adjust lever (175) so that the top aim of drive wheel (56) is flush with the larger diameter surface of motor pulley (60).
	2. Bracket (50) distorted.	2. Replace bracket (50) so that drive wheel (56) will be at the correct level with respect to each driving diameter of the motor pulley.
Changer runs at 45 rpm when a stack of 78 rpm records is loaded. (Speed switch at 78 rpm position).	1. Clamp (55) has lost its tension.	1. Replace clamp (55).
	2. Bracket (50) distorted.	2. Straighten or replace bracket (50).
Motor runs slowly or noisily.	1. Foreign matter between rotor and stator.	1. Clean between the rotor and stator to remove the foreign matter.
	2. Rotor not centered in stator.	2. Loosen the clamps, insert two 1-inch wide by .012-inch thick steel shims between the rotor and stator, tighten the clamps, and remove the shims.
Wow that varies with the motor speed.	1. Motor spindle bent.	1. Straighten the spindle or replace motor (184).
	2. Enlarged bore in the pulley.	2. Replace motor pulley (60). The motor pulley driving surface must be free from flats or other irregularities.
Turntable rotates too slowly.	1. Motor pulley (60) locking screw loose.	1. Tighten locking screw and check for correct height with respect to drive wheel (56) and control wheel (62).
Turntable does not rotate.	1. Bracket (57) or lever (164) distorted.	1. Straighten or replace.
	2. Spring (167) has lost its tension.	2. Replace spring (167).
	3. Lever (178) fails to return to its outward rest position.	3. Spring (177) broken or has lost its tension, and must be replaced.

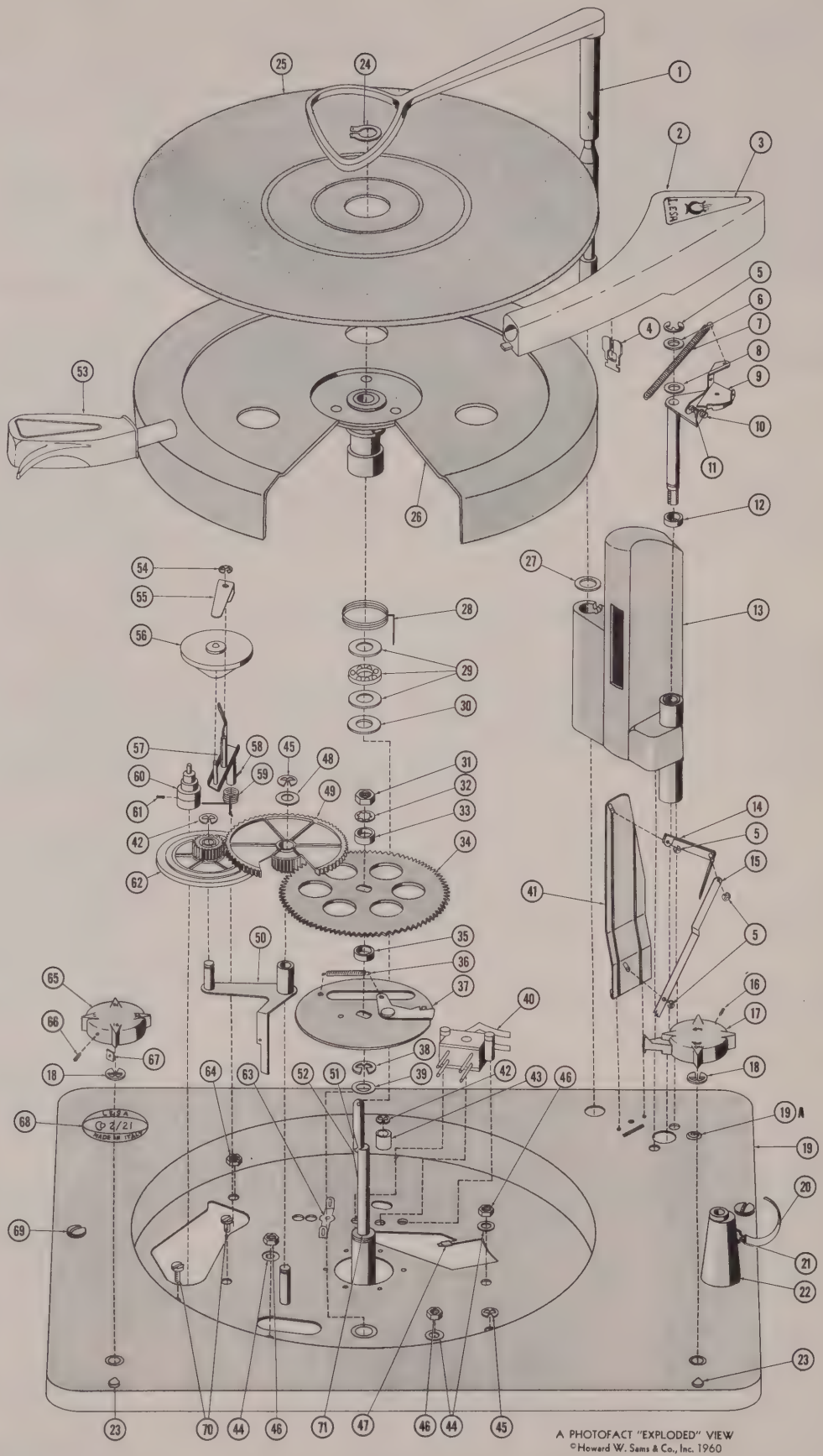


FIG. 4A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

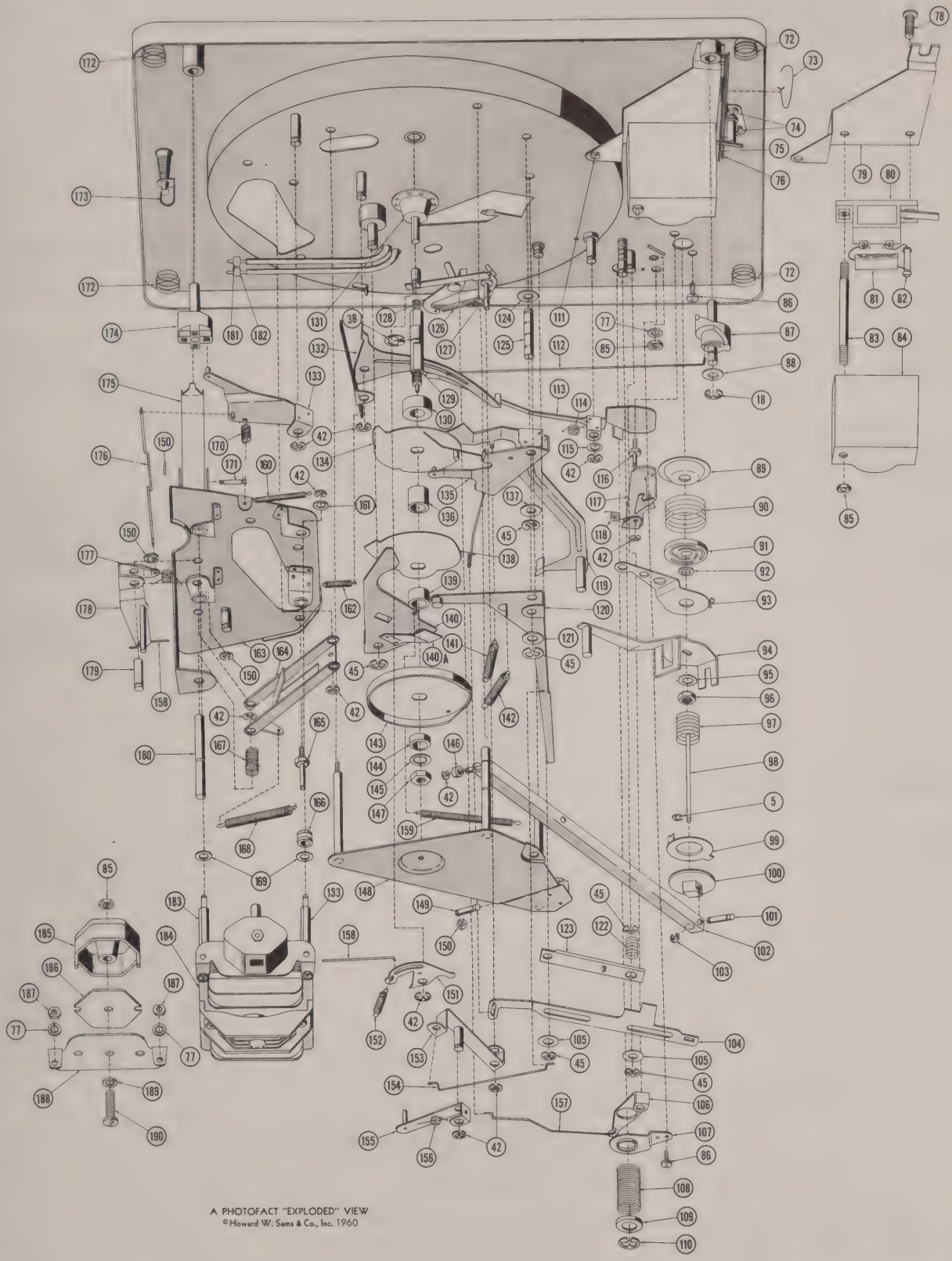


FIG. 4B EXPLODED VIEW OF PARTS BELOW BASEPLATE

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
Changer will not start.	1. Microswitch defective.	1. Replace microswitch.
	2. Tab on automatic control arm (132) misadjusted.	2. Adjust the tab on automatic control arm (132) so that there is a clearance of .012 to .028 inch between the tab and the tail of bracket (50), which protrudes under the base plate.
	3. Automatic control wheel (62) defective.	3. Replace automatic control wheel (62).
Tone arm does not set down properly.	1. Inward movement swing arm (119) distorted.	1. Bend inward movement swing arm, so that it will operate at midheight between slide arm (104) and hook arm (117).
	2. Outward movement arm (120) distorted.	2. Bend the arm so that the operating end of the tone arm is high enough for the outward movement arm to operate at midheight of the boss on arm (94).
	3. Incorrect friction between discs (99) and (100) during the inward and outward movement of the tone arm.	3. Clean the friction surfaces of (99) and (100). Replace disc (100) if its cork surface is worn out.
	4. Shank of disc (99) distorted.	4. Replace disc (99).
Automatic stop does not function.	1. Too much friction between hook arm (117) and its boss.	1. When inward movement arm (119) is all the way out, hook arm (117) should move from end to end as the tone arm is raised and lowered. The wire spring attached to lever (106) should be resting on, but not pressing against, hook arm (117). The spring should press against the arm when the record balancing arm reaches its end position and lever (106) is rotating in the opposite direction.
	2. Record balancing arm (1) does not lower under its own weight and action of spring (108).	2. Remove the record balancing arm and make sure the boss is not bent. Clean record balancing arm (1) with alcohol.
Record dropping cycle does not operate properly.	1. Spring attached to lever (140) has lost its tension.	1. The operating bar of the spindle should be pushed upwards, by the spring attached to lever (140), with a pressure of 5 5/16 oz.

Symptom	Cause	Remedy
	2. Operating bar does not function.	2. Replace the spindle.
	3. Retainer bar of spindle does not drop freely under its own weight.	3. Replace the spindle.
	4. Undersize or distorted center hole in record.	4. Do not use the record.
Hinge assembly (9) operates faulty.	1. Does not reach or overshoots its swing in the horizontal position.	1. Adjust the steel wire of lever (135) controlling slide arm (104).
	2. Spring (122) tension is not great enough to depress finger (14).	2. Adjust the friction by changing the position of circlip compressing spring (122).
	3. Too much play in lever (135).	3. Adjust the steel wire of lever (135) so that a slight pressure is exerted between the boss of cam (134) and lever (135).
Trip mechanism does not function properly.	1. Too much friction between the tone arm and lever (93) is causing the mechanism to trip.	1. Clean between the tone arm and lever to remove any foreign matter.
	2. Not enough friction between the tone arm and lever (93); therefore, not enough pressure to actuate lever (113) and to trip the mechanism.	2. Replace the clutch.
	3. Spring (28) deformed.	3. Straighten or replace spring (28).
	4. Lever (113) jammed; will not rotate when actuated by lever (93).	4. Free lever (113); replace or reform if necessary.
	5. Spring (114) has lost its tension; therefore it does not pull lever (113) back to its rest position. As a result, changer trips while the record is being played or at the start of a record	5. Replace spring (114).
	6. Lever (113) does not contact spring (28) until the needle has covered the lead-out groove entirely.	6. Bend end of lever (113) so that it contacts spring (21) earlier.
Needle jumps out of the playing groove of the record.	1. Worn or chipped needle.	1. Replace the needle.
	2. Cartridge defective.	2. Replace the cartridge.
	3. Tone arm cannot swing freely.	3. Tone arm lead is out of its housing.
	4. Records warped or worn.	4. Do not use records.
	5. Base plate not level.	5. Level base plate.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	130	Record Balancing Arm
2	142	Tone Arm
3	TAR. 287	Tone Arm Trade Mark Tag
4	150	Spring Clip
5	11	Circlip
6	149	Flat Washer
7	143	Tone Arm Spring
8		Flat Washer
9	108	Tone Arm Shaft & Hinge Ass'y.
10		Tone Arm Inward & Outward Adj. Screw
11		Tension Spring
12	107	Spacer
13	106	Housing
14	49	Record Size Finger
15	50	Record Size Finger Actuating Lever
16		Set Screw
17	105	Stop-On-Rej. Knob
18	15	Circlip
19	1	Baseplate
19A	165	Rubber Insulating Ring
20	102	Plastic Cover
21	101	Tone Arm Locking Device
22	100	Tone Arm Rest
23	164	Knob Position Indicator
24	137	Grip Ring
25	136	Rubber Mat
26	134	Turntable
27	138	Washer
28	135	Spring
29	133	Ball Race
30	176	Rubber Flat Washer
31	68	Hex Nut
32	18	Spring Washer
33	67	Spacer
34	82	Gear
35	81	Spacer
36		Spring
37	80	Locking Disc
38	16	Circlip
39	69	Flat Washer
40	1A	Muting Switch
41	48	Record Size Finger Mounting Bracket
42	13	Circlip
43	41	Pawl Insulating Ring
44	76	Spring Washer
45	14	Circlip
46	77	Ex. Nut.
47	5	Rubber Sleeve
48	86	Flat Washer
49	85	Gear
50	83	Drive Gear Mtg. Bracket
51	144	Record Retaining Pin
52	145	Record Dropping Pin
53	159	Plug-in Cartridge
54	12	Circlip
55	34	Rubber Drive Wheel Clamp
56	33	Rubber Drive Wheel
57	23	Rubber Drive Wheel Mtg. Bracket
58	167	Pin
59	166	Spring
60	32	Motor Pulley
61		Set Screw
62	84	Rubber Ring Automatic Control Wheel
63	160	Wire Clamp
64	31	Flat Washer
65	36	Speed Change Knob

Ref. No.	Part No.	Description
66		Set Screw
67		Nut
68	TAR. 348/1	Baseplate Trade Mark Tag
69	139	Baseplate Locking Screw
70	29	Screw
71	2	Spindle
72	4	Baseplate Suspension Spring
73	97	U Spring
74	103	Screws
75	89	Lever
76	90	Lever
77	157	Spring Washer
78	94	Screw
79	88	Plate
80	93	Microswitch
81	154	Resistor
82	155	Condenser
83	96	Stud
84	156	Micro Switch Cover
85	158	Cover Retaining Nut
86	51	Screw
87	95	Switch Actuating Cam
88	99	Flat Washer
89	113	Spring Retaining Collar
90	114	Spring
91	115	Spring Retaining Collar
92	116	Spacer
93	117	Lever
94	118	Lever
95	151	Spring Washer
96	119	Hex Nut
97	120	Compression Spring
98	121	Push Rod
99	122	Disc
100	125	Disc
101	126	Disc Mtg. Pin
102	123	Arm
103	152	Circlip
104	54	Slide Arm
105	53	Flat Washer
106	46	Automatic Shut Off Actuating Lever
107	109	Compression Spring Bracket
108	131	Spring
109	132	Collar
110	16	Circlip
111	104	Screw
112	98	Reject Rod
113	56	Auto Stop Lever
114	57	Spring
115	58	Flat Washer
116	110	Hook Arm Mtg. Stud
117	111	Hook Arm
118	112	Spring
119	74	Swing Arm
120	71	Outward Movement Arm
121	19	Flat Washer
122	52	Spring
123	55	Lever
124	153	Flat Washer
125	70	Pin
126	17	Spring
127	146	Trip Lever
128	163	Trip Pawl Lock
129	61	Shaft
130	175	Spacer
131	1B	Drum
132	59	Automatic Control Arm

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
133	37	Speed Selector Plate
134	62	Upper Cam
135	73	Lever
136	175	Spacer
137	19	Flat Washer
138	64	Cam
139	65	Spacer
140	128	Record Dropping Lever
140A	148	Spring
141	79	Spring
142	78	Spring
143	66	Lower Cam
144	67	Spacer
145	18	Spring Washer
146	124	Roller
147	68	Nut
148	75	Mtg. Plate
149	127	Pin
150	12	Circlip
151	39	Pawl
152	42	Spring
153	43	Pawl Actuating Lever
154	72	Pawl Actuating Lever Rod
155	44	Pawl Release Lever
156	45	Spring
157	47	Automatic Shut Off Connecting Rod
158	40	Drive Wheel Disengaging Rod
159	67	Spring
160	38	Spring
161	28	Flat Washer

Ref. No.	Part No.	Description
162	60	Spring
163	6	Motor Mounting Plate
164	22	Drive Wheel Lever
165	30	Stud and Nut
166	27	Grommet
167	25	Spring
168	26	Spring
169	28	Flat Washer
170	38	Spring
171	21	Pin
172	3	Baseplate Suspension Spring
173	140	Locking Screw Spring
174	35	Speed Change Cam
175	20	Drive Wheel Shift Lever
176	10	Drive Wheel Disengaging Rod
177	9	Spring
178	7	Drive Wheel Disengaging Lever
179	8	Pin
180	24	Speed Change Shaft
181	161	Right Channel Shielded Cable
182	162	Left Channel Shielded Cable
183	169	Motor Support
184	141	Motor
185	172	AC Connection & Cover
186	171	Insulating Plate
187	170	Ex. Nut
188	168	AC Connection Mount
189	173	Locking Spring
190	174	Screw

PHOTOFACT® Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MAGNAVOX
CHASSIS AMP197-00, -10, -20

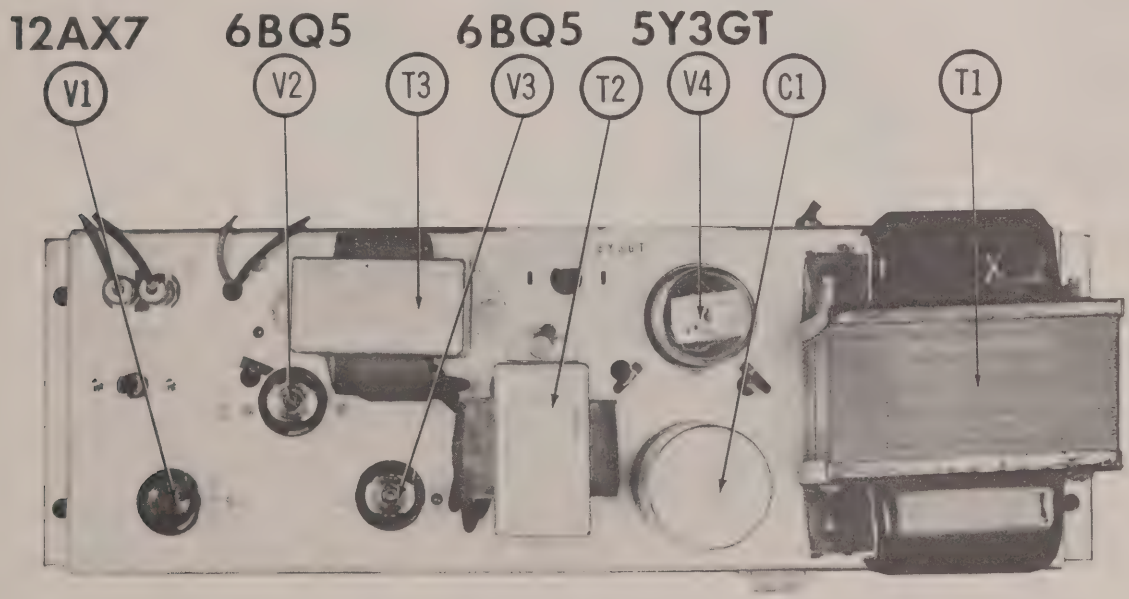
MAGNAVOX
CHASSIS AMP197-00, -10, -20

REPRESENTATIVE MODEL USING
CHASSIS AMP 197-00

MAGNAVOX
CHASSIS AMP197-00, -10, -20

TRADE NAME	Magnavox Chassis Amp. 197-00, 197-10, 197-20
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 69 Watts, .65 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER F-200C – SEE SIMILAR COLLARO CONQUEST REVISED – PHOTOFACT SET 408 FOLDER 6



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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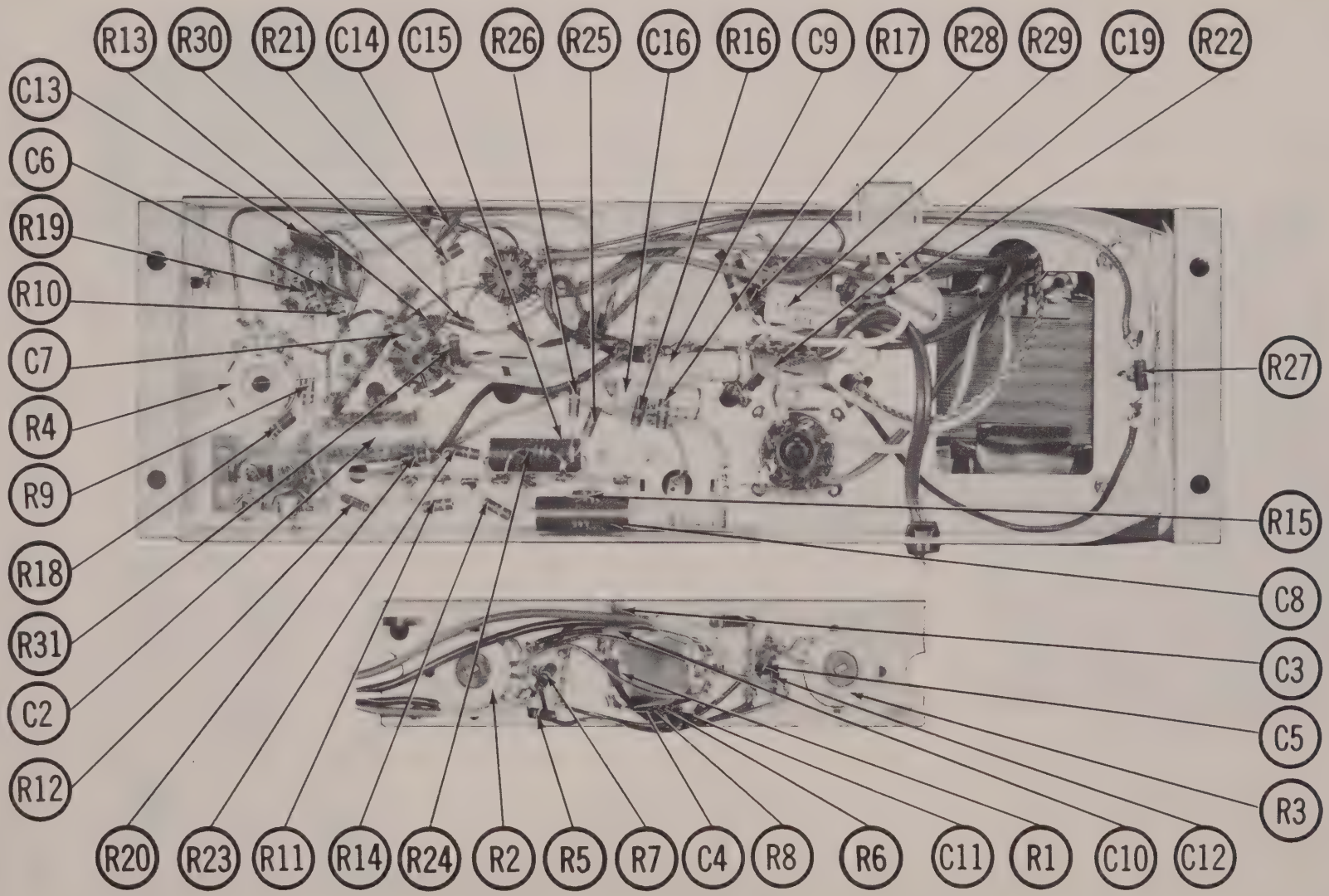
JT618

SET 479 FOLDER 12



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V2	Left Channel Output	6BQ5
V3	Right Channel Output	6BQ5
V4	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	270021-82	AFH4-79-10	D0663.2	FP430.6	TMQ-164	TVL-4739	
B	■30	450							
C	▲40	400							
D	40	25							
C2	20	25	270027-28	SRE25V20	NLW20-25	TT25X20	ML-20-25	TE-1206	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C4	68 10%		1469-000068	TCZ-68	22R5Q68	CM-19B-680K	CNO-468	MS-468
C5	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C7	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C8	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C9	.033 200V		P288N-033	DD-303	CUB4S33	4DP-2-333	GEM-4133	4TM-S33
C10	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C11	68 10%		1469-000068	TCZ-68	22R5Q68	CM-19B-680K	CNO-468	MS-468
C12	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C14	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C15	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C16	.033 200V		P288N-033	DD-303	CUB4S33	4DP-2-333	GEM-4133	4TM-S33
C17	2mfd 100V		P282Z-2.0		MP2W2			118P20502S2
C18	2mfd 100V		P282Z-2.0		MP2W2			118P20502S2
C19A	10000 1400V	#250219-3	DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-2X110	BL-S10
B	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103		BL-S10
C20	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10

Magnavox Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.3meg*	½	220151-4	BT-180			† UE4039	Loudness, Channel 1
B	3.3meg*	½		STR-180				Loudness, Channel 2
R2A	1meg	½	220151-5	B-69	AD47-1meg-Z		■ UE1706	Treble, Channel 1
B	1meg	½		SR-69	Not Req.			Treble, Channel 2
C	Shaft			Not Req.	FS-3			
R3A	3meg	½	220151-6	B-85			▲ UE3971	Bass, Channel 1
B	3meg	½		SR-85				Bass, Channel 2
R4	1meg	½	220154-5	F1-51	B47-1meg-S	Q11-137	SU-54	Balance

† "STA-LOC" equivalent: FA36DT155, RU36DT155, CS3500.
■ "STA-LOC" equivalent: FA16L, RU16L, CS3500.
▲ "STA-LOC" equivalent: FA36A, RU36A, CS3500.
* Taps @ 350K and 1.7meg.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	220K	
R6	100K	
R7	220K	
R8	100K	
R9	47K	
R10	470K	
R11	180Ω	
R12	1200Ω	
R13	47K	
R14	1500Ω	
R15	27K	
R16	100Ω	
R17	1500Ω	
R18	47K	
R19	470K	
R20	180Ω	
R21	47K	
R22	82Ω 2W	
R23	1500Ω	
R24	27K	
R25	100Ω	
R26	1500Ω	
R27	22Ω	
R28	1500Ω 2W	
R29	120Ω 3W	
R30	100Ω	
R31	100Ω	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .65A	570 VCT ⓐ .090A	5V ⓐ 2A	6.3V ⓐ 2A			300178-1	22R05U			P-8177	22R05U	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6500Ω	3-4Ω	320083-1	26S48	A-3020	AU-600	A-3823	26S48	S-9Z	
T3	6500Ω	3-4Ω	320083-1	26S48	A-3020	AU-600	A-3823	26S48	S-9Z	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MAGNAVOX PART No.	QUAM PART No.	NOTES
SP1	12"	PM	4-6Ω	583994	12A6AZ5.2	
SP2	8"	PM	4-6Ω	584004	6A1Z5.9	
SP3	5"	PM	3-4Ω	580058-1	5A15TZ3.8	
SP4	12"	PM	4-6Ω	583994	12A6AZ5.2	
SP5	8"	PM	4-6Ω	584004	6A1Z5.9	
SP6	5"	PM	3-4Ω	580058-1	5A15TZ3.8	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA MAGNAVOX PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1		13TB	Not Req.	26S	Not Req.			8TA4-S	N-8TA-S

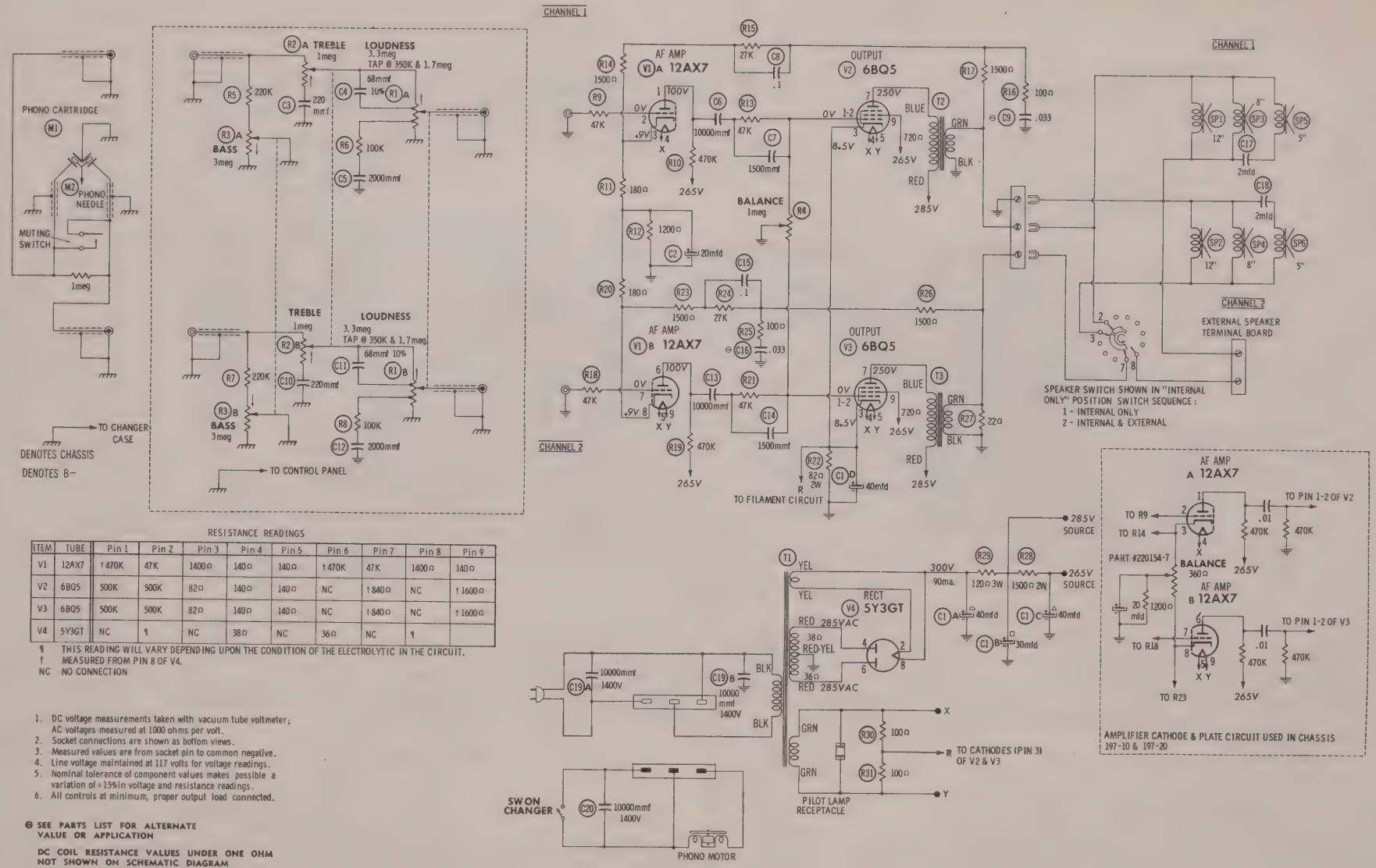
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA MAGNAVOX PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M2		W-103STSS † or W-103STDS †♦ or W-103STD-1♦	S-69X † or S-69XSD †♦ or S-69XDD♦	† Jewel ♦ Diamond

MAGNAVOX
CHASSIS AMP197-00, -10, -20

FOLDER 12



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†470K	47K	1400Ω	140Ω	140Ω	†470K	47K	1400Ω	140Ω
V2	6BQ5	500K	500K	82Ω	140Ω	140Ω	NC	†840Ω	NC	†1600Ω
V3	6BQ5	500K	500K	82Ω	140Ω	140Ω	NC	†840Ω	NC	†1600Ω
V4	5Y3GT	NC	¶	NC	38Ω	NC	36Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MAGNAVOX
CHASSIS AMP197-00, -10, -20

PHOTOFACT® Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

OLYMPIC MODEL 730

OLYMPIC MODEL 730

OLYMPIC MODEL 730

TRADE NAME	Olympic Model 730
MANUFACTURER	Olympic Radio & TV Inc., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	AC Operated 5 Tube AM Receiver With Stereo Output and 4 Speed Automatic Record Changer
POWER SUPPLY	105-120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	540 — 1620KC
RATING	53 Watts, .56 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1500KC	1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	"	Tune to max. signal.	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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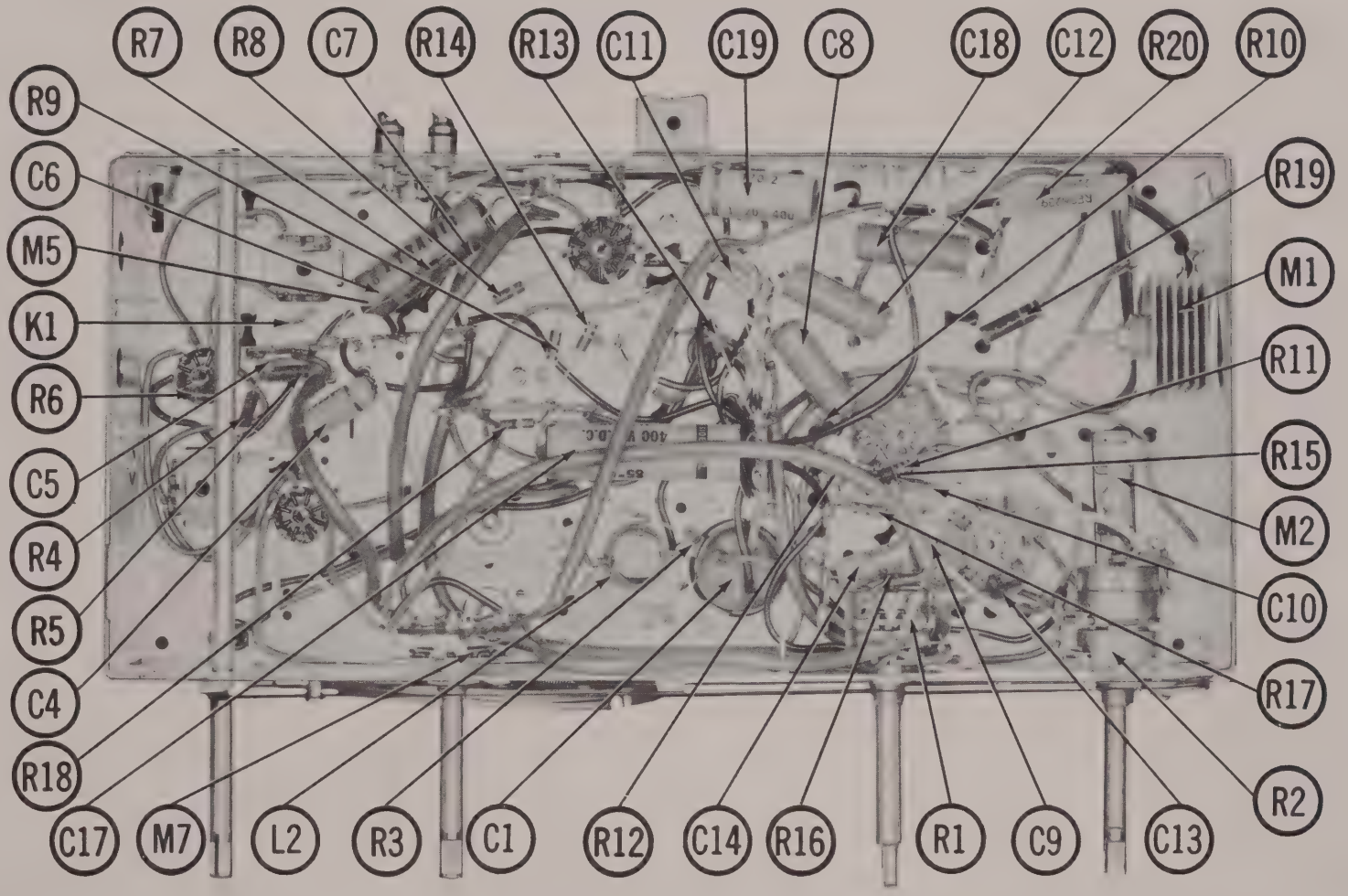
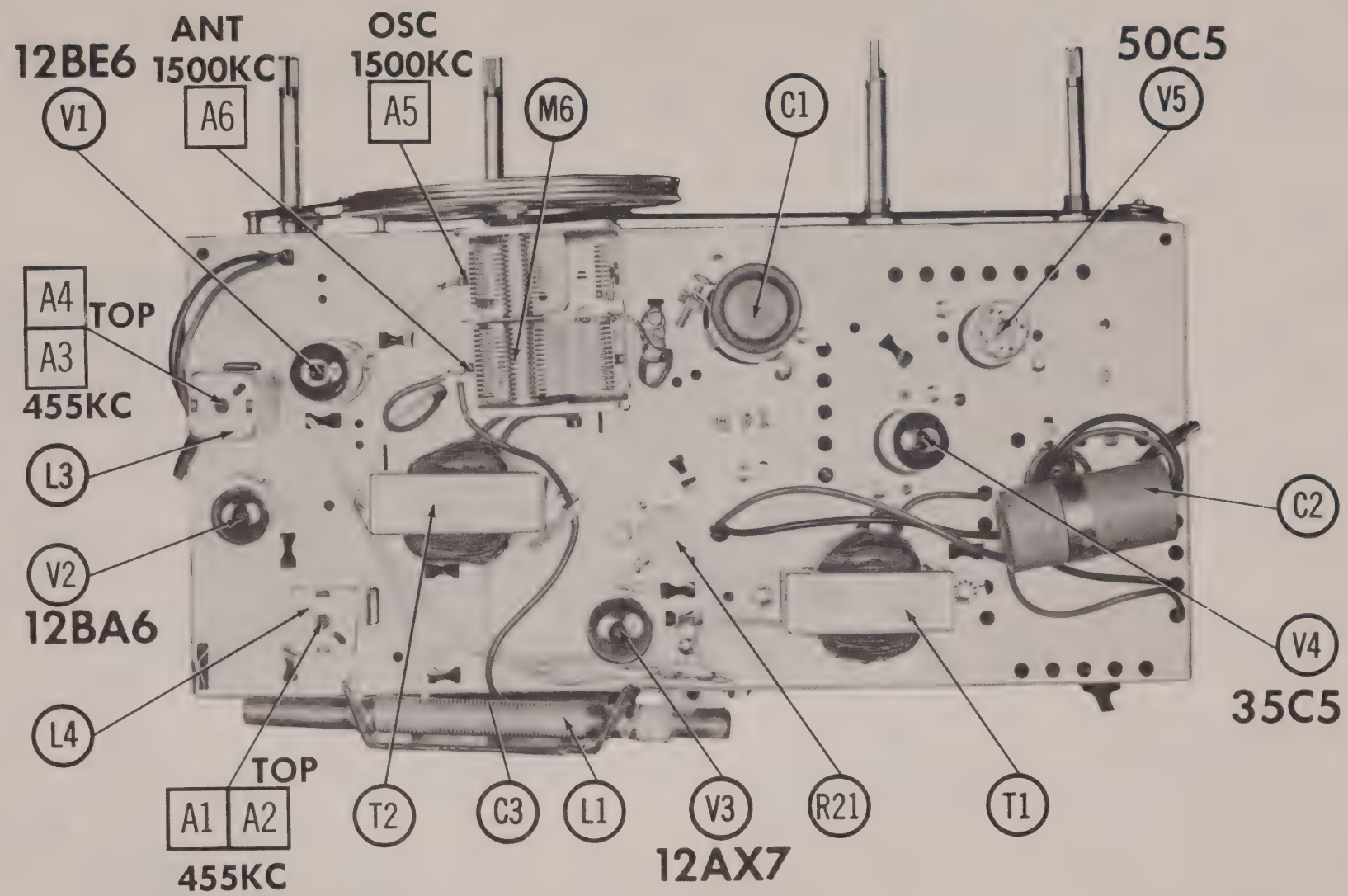
JP531

SET 479 FOLDER 13



CHASSIS BOTTOM VIEW



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Channel A Output	35C5
V2	IF Amplifier	12BA6	V5	Channel B Output	50C5
V3	Channel A AF Amp-Channel B AF Amp.	12AX7			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	CO25744	PRS2240	BBRD8515	TCD498	TDLD-13	TVA-2462	
B	80	150							
C2	50	250	CO2068-3	PRS1585	BR5025	TC59	TD-50-450	TVA-1713	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA ●					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10 N750	Note 1	N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C4	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C5	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C6	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C7	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C8	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C9	2000	(5000) *	BPD-002	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C10	.022 400V	(.002) *	P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C11	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C12	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C13	2000	(5000) *	BPD-002	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C14	.022 400V	(.002) *	P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C15	2.2mfd 3V			UK-225	MP2W2			HY150
C16	2.2mfd 3V			UK-225	MP2W2			HY150
C17	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C18	.047 400V	Note 1	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C19	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

Note 1. Not used in some versions.
* Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	1/2	PT26307					Loudness, Channel B
B	1meg	1/2						Loudness, Channel A
R2A	3meg	1/2	PT26208	B-85				Treble, Channel B
B	3meg	1/2		SR-85			■ UE3971	Treble, Channel A
C	Switch	1/2		KR-2				Power Off-On

■ "STA-LOC" equivalent: FA36A, RU36A, CS3500, US42.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	22K	
R4	2.2meg	
R5	1meg	
R6	68Ω	
R7	1meg	
R8	6.8meg	
R9	470K	

ITEM No.	RATING	REMARKS
R10	470K	
R11	3300Ω	
R12	150Ω	
R13	6.8meg	
R14	470K	
R15	470K	
R16	3300Ω	

ITEM No.	RATING	REMARKS
R17	150Ω	
R18	100K	
R19	1000Ω 1W	
R20	220Ω 7W	
R21	700Ω 15W	#RE25920

Olympic Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		OLYMPIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	LP25351						
L2	Osc. Coil	CL2709	14-1073	14-1073		69-OSC *		
L3	Input IF	TRI644	16-6758	16-6758	BC-352	12-C1	RF-1	
L4	Output IF	TRI645	16-6758	16-6758	BC-353	12-C2	RF-2	

* Drill New Mtg. Hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5300Ω	6-8Ω	TR25922	24S64	A-2901	AU-604	A-3823	24S64	S-53X	
T2	5300Ω	6-8Ω	TR25922	24S64	A-2901	AU-604	A-3823	24S64	S-53X	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	SK-1906	8A31	
SP2	8"	PM	3-4Ω	SK-1906	8A31	
SP3	4"	PM	3-4Ω	SK-4342	4A07	
SP4	4"	PM	3-4Ω	SK-4342	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA	
K1	Diode RF Filter	150mmf, 150mmf, 47K	PC2478-1	Aerovox Centralab Cornell-Dubilier Sprague	PA-98 PC-51 1117M2 D-2

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	OLYMPIC PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.096A	RF 3160	T150	1235AH	150	SR200	Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLYMPIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	1A 250V	FU5285		312001 (3AG 1A 250V)	357001	AGC 1	4406

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	OLYMPIC PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M3		86-TB	Not Req.	ǂ 66	Not Req.			8TA4-S	N-8TA-S

ǂ Use Mount PT-3.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS	
	OLYMPIC PART No.	CLEVITE WALCO PART No.	JENSEN PART No.		
M4		W-106STS † or W-106STD †♦	CRA-55 † or CRA-55X † or CRA-55XD ♦†	† Jewel	♦ Diamond

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M5	1N541	1N541	1N60	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M6	Tuning Cap	CV2681	2 Gang (Ant. 24—447mmf, Osc. 30—195mmf)
M7	Switch	SW26200-1	Function
M8	Switch		Channel "B" External-Internal (DPDT, Slide Type)

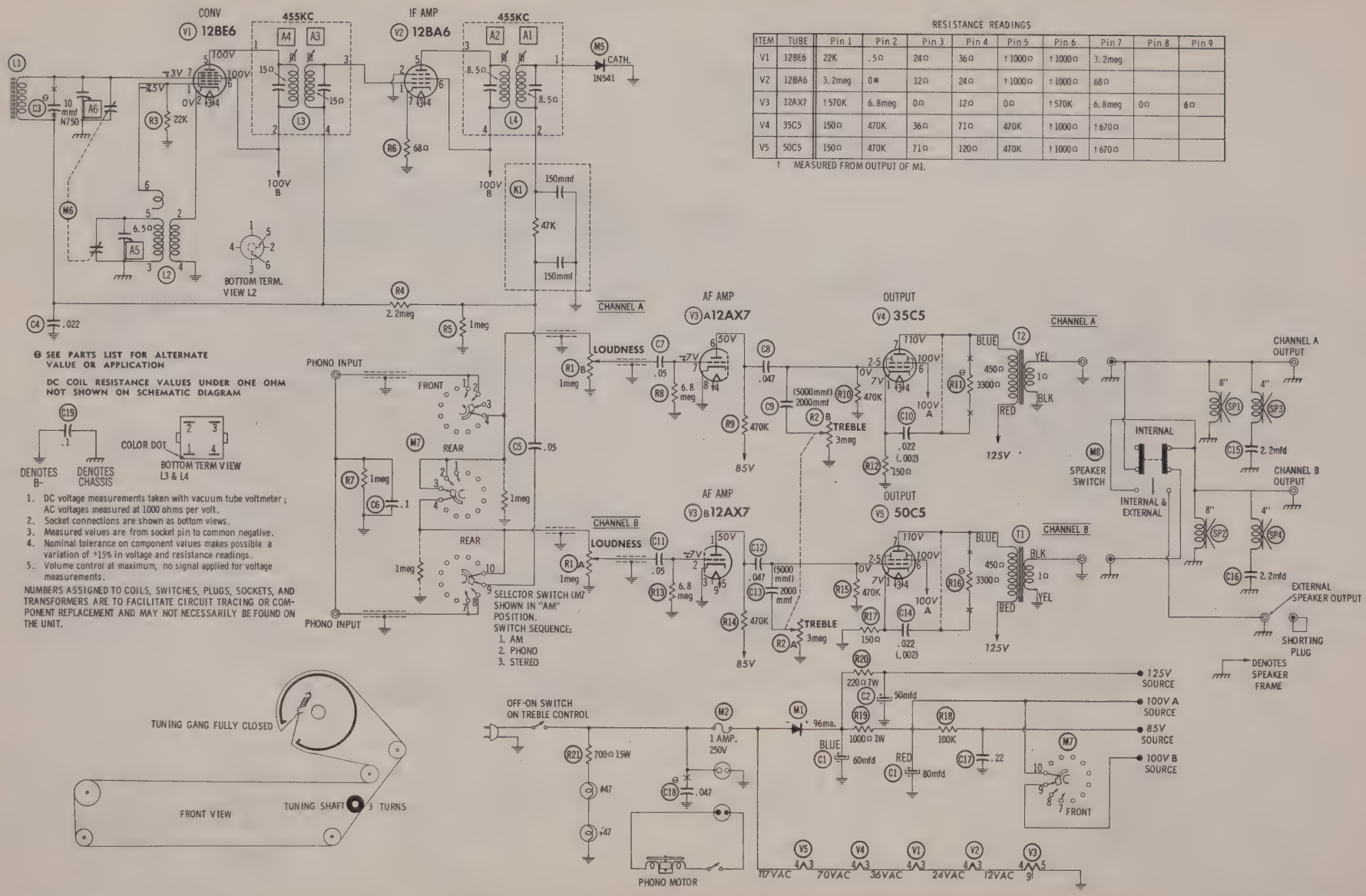
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	DL25979	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BE6	22K	.5Ω	24Ω	36Ω	†1000Ω	†1000Ω	3.2meg		
V2	12BA6	3.2meg	0Ω	12Ω	24Ω	†1000Ω	†1000Ω	68Ω		
V3	12AX7	†570K	6.8meg	0Ω	12Ω	0Ω	†570K	6.8meg	0Ω	6Ω
V4	35C5	150Ω	470K	36Ω	71Ω	470K	†1000Ω	†670Ω		
V5	50C5	150Ω	470K	71Ω	120Ω	470K	†1000Ω	†670Ω		

† MEASURED FROM OUTPUT OF M1.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

DENOTES B-

DENOTES CHASSIS

COLOR DOT

BOTTOM TERM VIEW L3 & L4

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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OLYMPIC MODEL 730

PHOTOFACT® Folder

RCA VICTOR MODELS XF2, XF3EH, XF3EM, XF3J, XF4 (Ch. RC-1190, A, B)

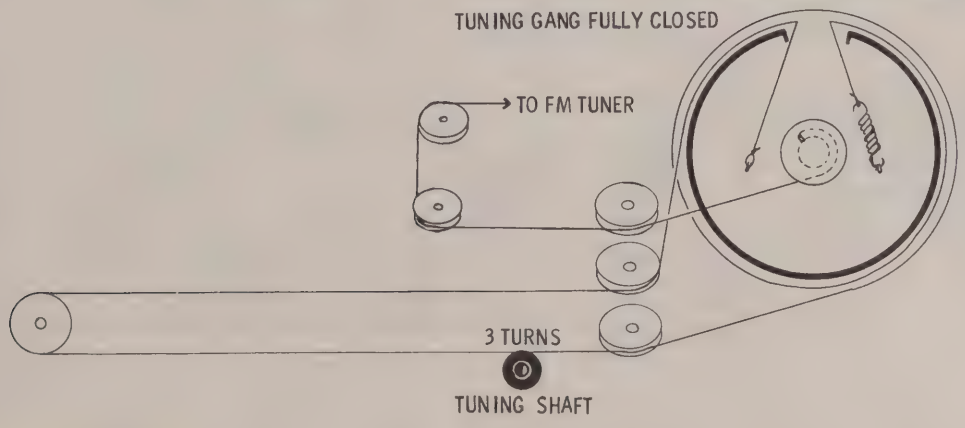
RCA VICTOR MODELS XF2, XF3EH, XF3EM, XF3J, XF4 (Ch. RC-1190, A, B)

MODEL XF3EM

RCA VICTOR MODELS XF2, XF3EH, XF3EM, XF3J, XF4 (Ch. RC-1190, A, B)

TRADE NAME	RCA Victor Models XF-2 (Ch. RC-1190); XF-3EH, XF-3EM, XF-3J (Ch. RC-1190A); XF-4 (Ch. RC-1190B)		
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.		
TYPE SET	AC-DC Operated 7 Tube FM-AM Receiver		
POWER SUPPLY	110-120 Volts AC-DC	RATING	27 Watts, .325 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535—1620KC	FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JK571

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

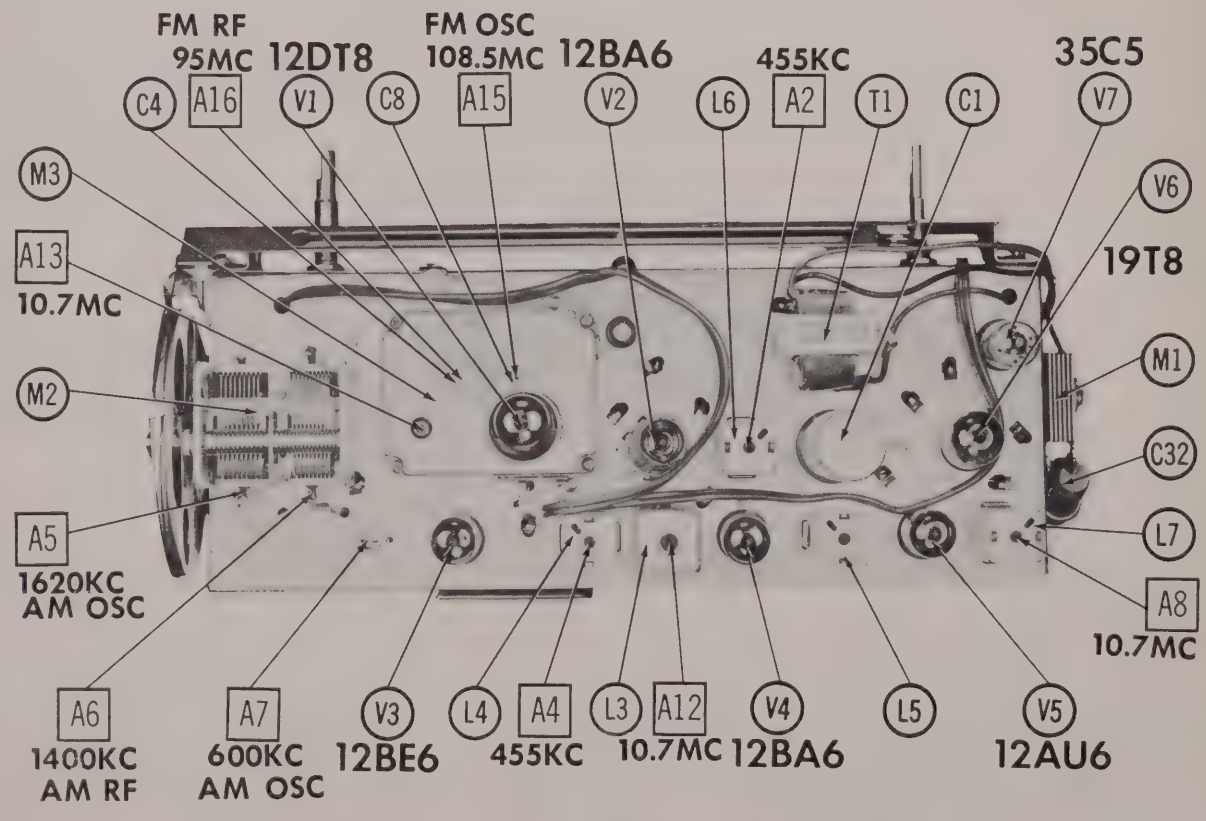
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4, A8, A9, A10....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A5, A6.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A7.....	GENERAL CEMENT #8721, 8722 WALSCO #2519
A11, A12.....	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987 WALSCO #2531
A13, A14.....	GENERAL CEMENT #8282, 8606, 8606L, 9091 WALSCO #2526, 2541, 2543, 2544
A15, A16.....	GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC signal.	"	A6	"
4.	"	600KC	Tune to 600KC signal.	"	A7	Adjust for maximum output while rocking tuning gang.



CHASSIS—TOP VIEW

ALIGNMENT INSTRUCTIONS (cont)

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM--SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 7 (grid) of 1st FM IF. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A9	Adjust for maximum deflection.
7.	"	"	"	DC probe to pin 1 (grid) of FM Limiter. Common to chassis.	A10, A11, A12	"
8.	High side thru 270Ω to number 2 terminal of antenna terminal board. Low side to chassis.	"	"	"	A13, A14	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE--SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of 1st FM IF. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8	Adjust to place marker at center of cross-over lines as in Fig. 1.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A9	Adjust for maximum gain and symmetry of response similar to Fig. 2.
7.	"	"	"	Vert. amp. to pin 1 of FM Limiter. Low side to chassis.	A10, A11, A12	"
8.	High side thru 270Ω to number 2 terminal of antenna terminal board. Low side to chassis.	"	"	"	A13, A14	"

FM RF ALIGNMENT--SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru 270Ω to number 2 terminal of antenna terminal board. Low side to chassis.	87.5MC (Unmod.)	(FM) Tuning gang fully closed.	DC probe to pin 1 (grid) of FM Limiter. Common to chassis.	FM Tuner string drive collar.	Adjust FM Tuner string drive collar for maximum deflection and tighten set screws.
10.	"	108.5MC	Tuning gang fully open.	"	A15	Adjust for maximum deflection.
11.	"	95MC	Tune to 95MC signal.	"	A16	"

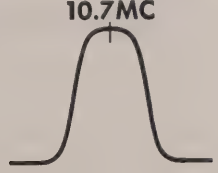


FIG. 1

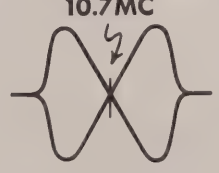
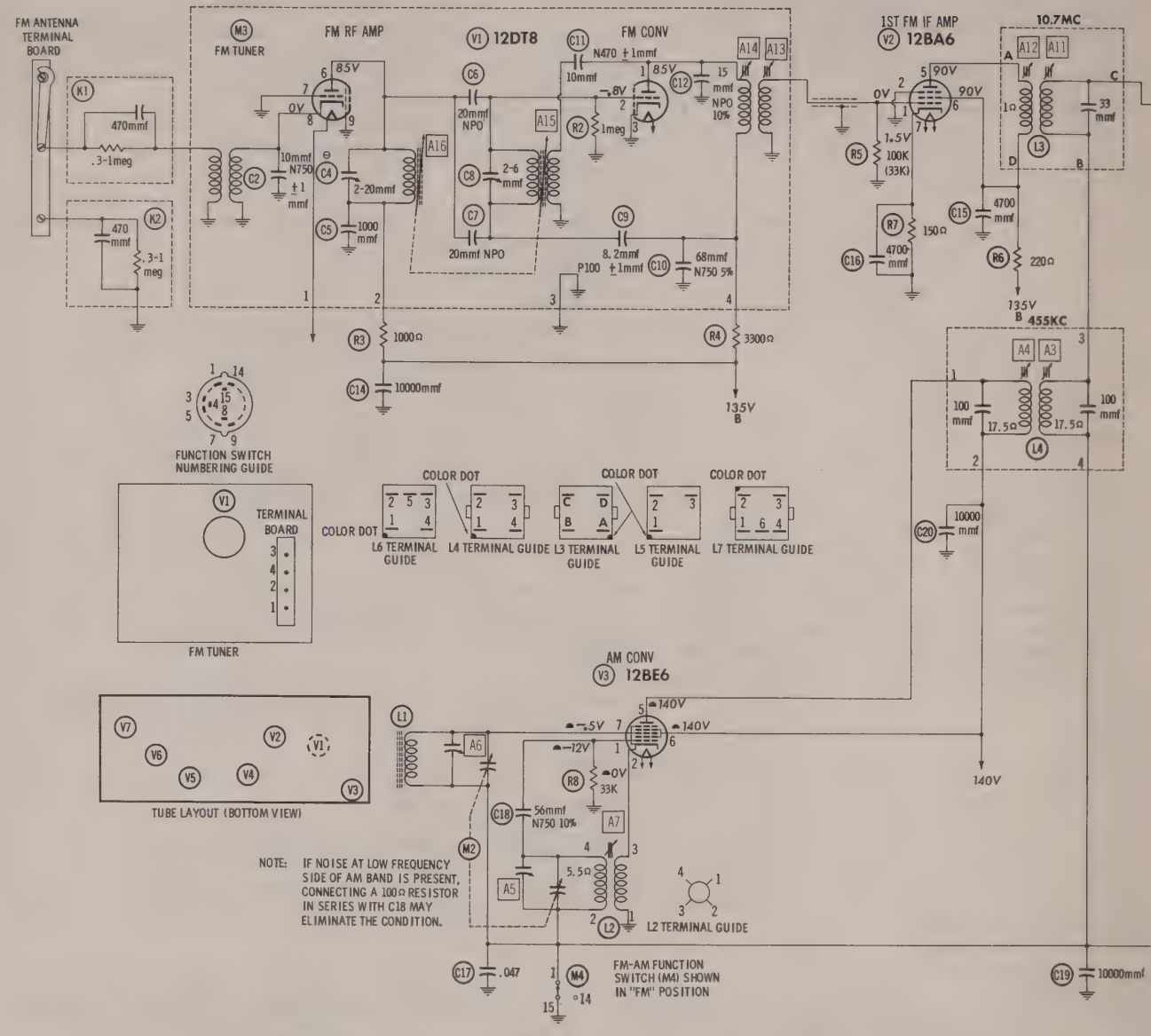


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†4500Ω	1meg	0Ω	67Ω	79Ω	†2200Ω	0Ω	.5Ω	
V2	12BA6	1.6Ω	0Ω	55Ω	43Ω	†1400Ω	†1400Ω	150Ω		
V3	12BE6	33K	.9Ω	55Ω	67Ω	†▪1200Ω	†▪1200Ω	▪2.7meg		
V4	12BA6	20Ω 2.7meg	0Ω	31Ω	43Ω	†1400Ω	†1400Ω	82Ω		
V5	12AU6	430K	0Ω	31Ω	19Ω	†11K	†11K	120Ω		
V6	19T8	100K	100K	200K	0Ω	19Ω	2.2meg 550K	0Ω	4.7meg	†470K
V7	35C5	150Ω	430K	79Ω	115Ω	430K	†1200Ω	†280≡		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▪ MEASURED IN "AM" POSITION.
† MEASURED FROM OUTPUT OF M1.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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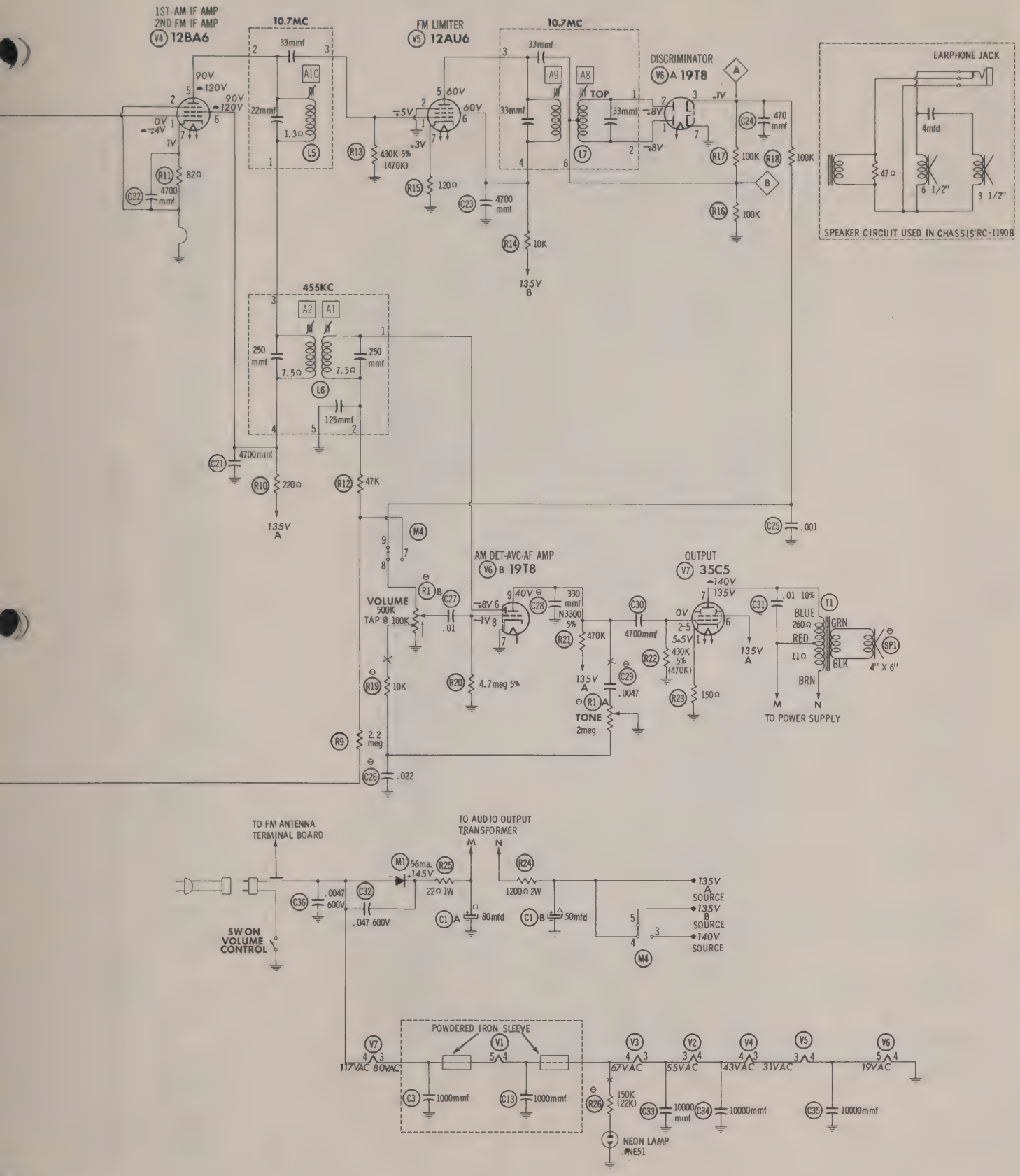
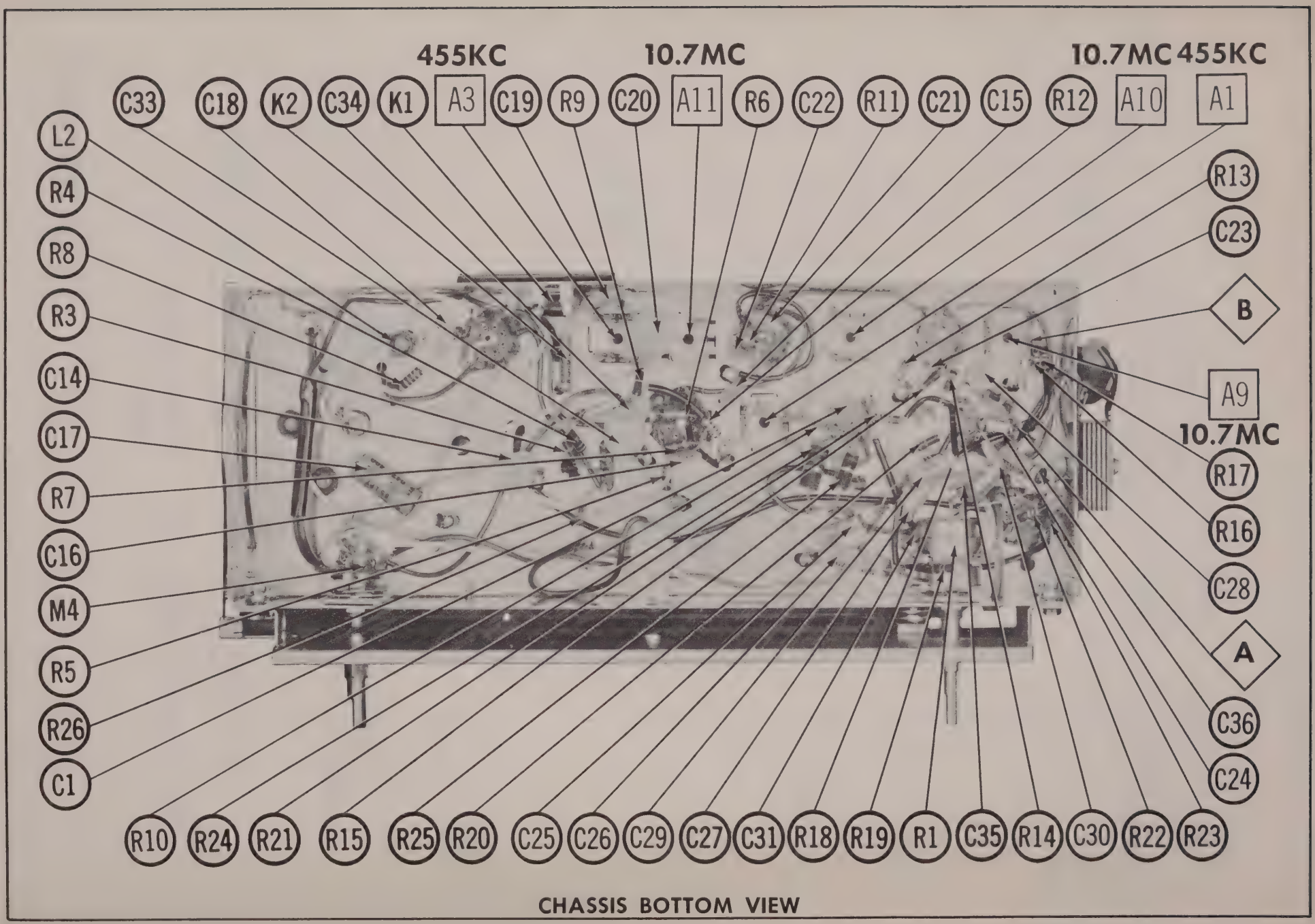


RCA VICTOR MODELS XF2, XF3EH, XF3EM, XF3J, XF4 (Ch. RC-1190, A, B)



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	FM RF Amplifier-FM Converter	12DT8
V2	1st FM IF Amplifier	12BA6
V3	AM Converter	12BE6
V4	2nd FM-1st AM IF Amp.	12BA6
V5	FM Limiter	12AU6
V6	Discriminator-AM Det. - AVC-AF Amp.	19T8
V7	Output	35C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	73520	AFH2-19	XB0181	FP216	TMD-17	TVL-2442.1	
B	▲50	150							

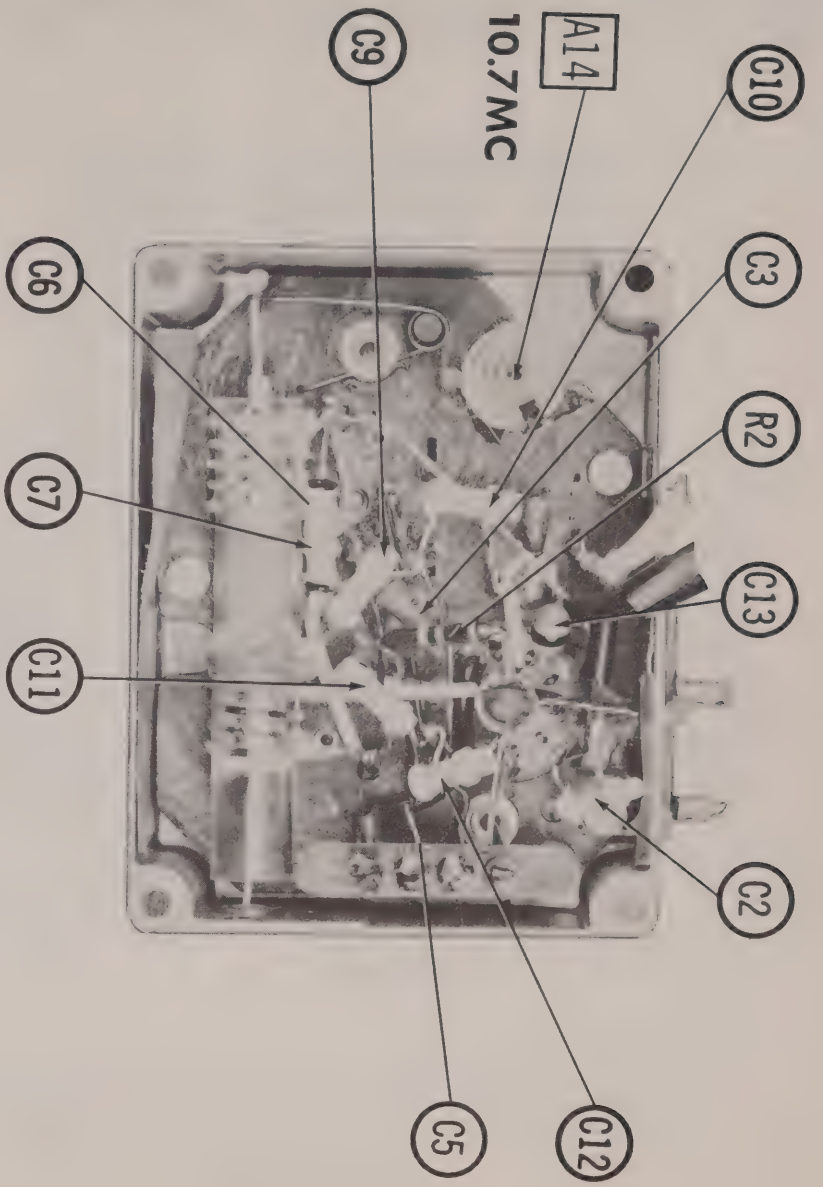
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10 N750 ± 1mmf		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C3	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C4	2-20	Note 1						
C5	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C6	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-420	10TCC-Q20
C7	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-420	10TCC-Q20
C8	2-6			829-6		CV-3	CT552	
C9	8.2 P100 ± 1mmf							
C10	68 N750 5%			TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C11	10 N470 ± 1mmf							
C12	15 NPO 10%		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C13	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C16	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C17	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C18	56 N750 10%		N750-SI 56	TCN-56	C10Q56U	CCTN-560	CN7-560	10TCU-Q56
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C21	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C22	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C23	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C24	470		SI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C25	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D1
C26	.022 400V	Note 2	P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C27	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C28	330 N3300 5%	Note 3						
C29	.0047 400V	Note 2	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C30	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C31	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C32	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C36	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47

Note 1. Ch. 1190 uses 2-10mmf trimmer in this application.
Note 2. Not used in Ch. 1190 Series.
Note 3. Ch. 1190 uses 1000mmf in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FM RF SUBCHASSIS



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	107051	F1-67		† QJ-1146R	■ UE4085-S	Tone Note 1
B	500K 100K Tap	½		R2-44				Volume Note 1
C	Switch			KR-1				Power Off-On

† "Concentrikit" equivalent: K-2 kit with base elements & shafts: B11-139, P1-106 (Panel)
Not available as a factory assembled unit. B13-133X, R1-200 (Rear)
76-1 (Switch)

■ "STA-LOC" equivalent: FA26L, RU55T15L, OF1187, IS2000, US41.
Note 1. XF-2 series uses 500K Volume with switch (Part #108303).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1meg	
R3	1000Ω	
R4	3300Ω	
R5	100K	(33K) *
R6	220Ω	
R7	150Ω	
R8	33K	
R9	2.2meg	
R10	220Ω	

ITEM No.	RATING	REMARKS
R11	82Ω	
R12	47K	
R13	430K 5%	(470K) *
R14	10K	
R15	120Ω	
R16	100K	
R17	100K	
R18	100K	
R19	10K	Note 1

ITEM No.	RATING	REMARKS
R20	4.7meg 5%	
R21	470K	
R22	430K 5%	(470K) *
R23	150Ω	
R24	1200Ω 2W	
R25	22Ω 1W	
R26	150K	(22K) * Note 1

* Alternate Value.
Note 1. Not used in Ch. RC-1190.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA	
K1	FM Antenna Isolation	470mmf, .3-1meg	104328	Centralab	RC-471
				Sprague	AC1-1
K2	FM Antenna Isolation	470mmf, .3-1meg	104328	Centralab	RC-471
				Sprague	AC1-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick	107050			BC-419			
L2	AM Osc. Coil	79057			BC-393			
L3	2nd FM IF	77513	16-3472	16-3472				
L4	1st AM IF	77416	16-6758	16-6758	BC-352	12-C1	RF-1	
L5	3rd FM IF	77512						
L6	2nd AM IF	76328	16-6770	16-6770	BC-355	12-C6		
L7	Discriminator	77511	17-3494	17-3494	FM-253	1464		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3000Ω Tap ⓐ 5%	3-4Ω	77517	24S50A①	A-3031①		A-3336①	24S50A①	S-16X①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"x 6"	PM	3-4Ω	①107006	46A1	① Used in XF-2 & XF-3 Series.
	3½"	PM	6-8Ω	②105395		② Used in XF-4 Series.
	4"x 6"	PM	3-4Ω	②102634		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA RCA Victor PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.056A	① 77519	T100	1235AH	100	② SR200	① Selenium Type ② Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M2	Tuning Cap	107002	AM, 2 Gang (Ant. 42—330mmf, Osc. 42—159mmf)
M3	FM Tuner	107004	Complete
M4	Switch	107003	Function (FM-AM)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	107008	Tuning, XF-3, XF-4 Series
Knob	108305	Tuning, Model XF-2
Knob	107007	Volume, XF-3, XF-4 Series
Knob	108304	Volume, Model XF-2
Knob	107010	Tone, XF-3, XF-4 Series
Knob	107009	Function, (FM-AM) XF-3, XF-4 Series
Knob	108306	Function, (FM-AM) Model XF-2
Dial Pointer	107005	XF-3, XF-4, XF-2 Series
Dial Window	107011	XF-2, XF-3 Series
Cabinet	Y7036	Model XF-3J
Cabinet	Y7035	Model XF-3EH
Cabinet	Y7034	Model XF-3EM
Cabinet	X4619	Model XF-4, Mahogany
Cabinet	X4622	Model XF-4, Maple
Cabinet	X4621	Model XF-4, Oak
Cabinet	X4620	Model XF-4, Walnut
Cabinet	Y7075	Model XF-2, Moonmist Gray

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

EIA MEMBER

SYLVANIA MODELS SC05, SC08, 4315, 4318, 4321, 4705 Series (Ch. 1-633-1, 1-636-1)

SYLVANIA MODELS SC05, SC08, 4315, 4318, 4321, 4705 Series (Ch. 1-633-1, 1-636-1)

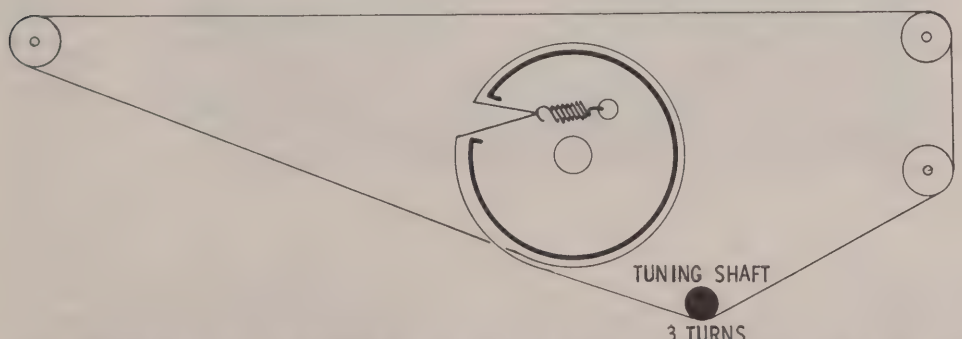
MODEL 4705M

SYLVANIA MODELS SC05, SC08, 4315, 4318, 4321, 4705 Series (Ch. 1-633-1, 1-636-1)

TRADE NAME	Sylvania Models SC05, SC08, 4315, 4318, 4321 (Amp. Ch. 1-633-1); 4705 Series (Tuner Ch. 1-636-1)		
MANUFACTURER	Sylvania Home Electronic; Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N. Y.		
TYPE SET	AC Operated 7 Tube FM-AM Tuner, 4 Tube Amplifier, and 4 Speed Automatic Record Changer		
POWER SUPPLY	110-120 Volts AC	RATING	88 Watts, .84 Amp. @ 117 Volts AC (FM)
TUNING RANGE—BROADCAST	540—1650KC	FREQ. MOD.	88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18

DIAL CORD STRINGING



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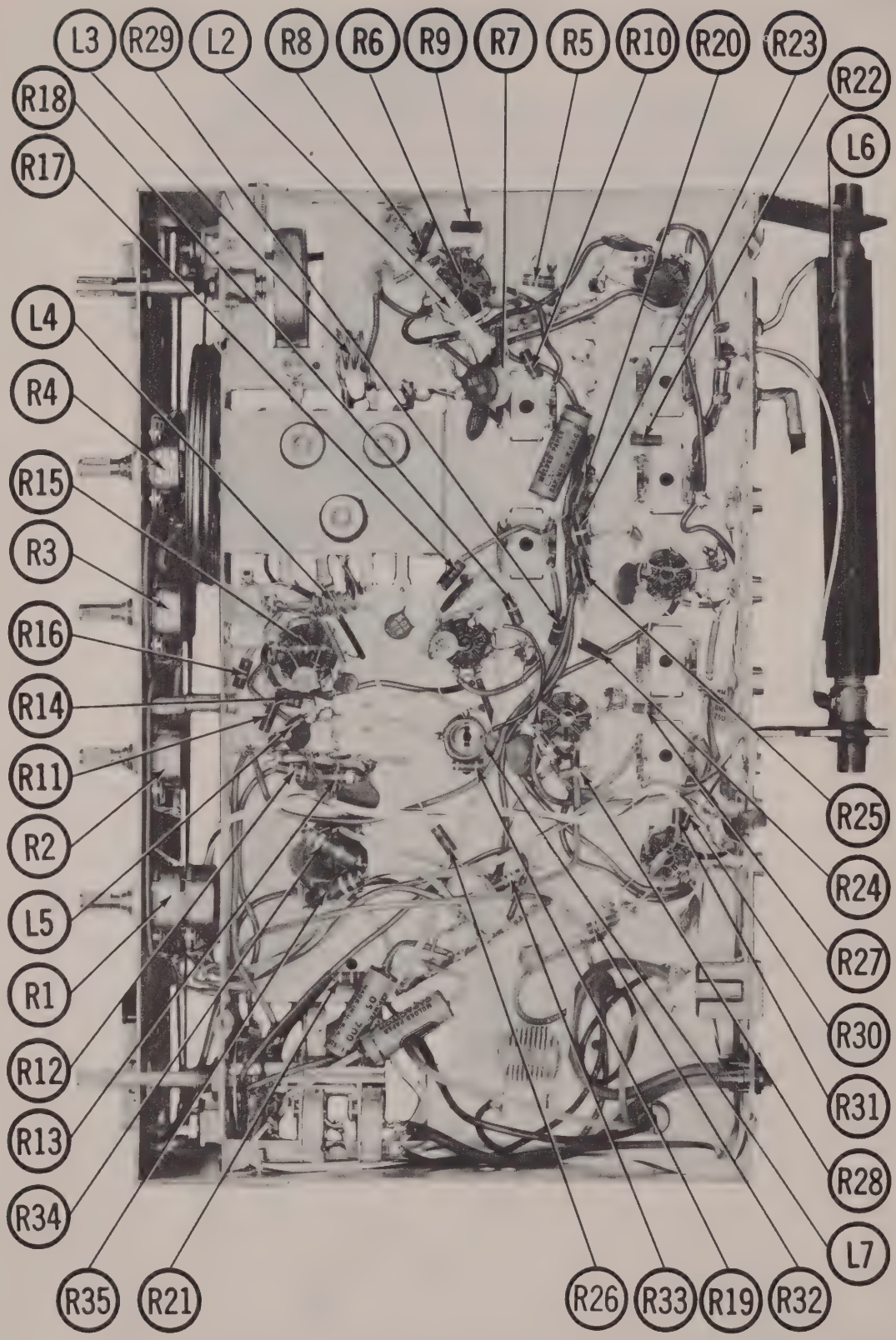
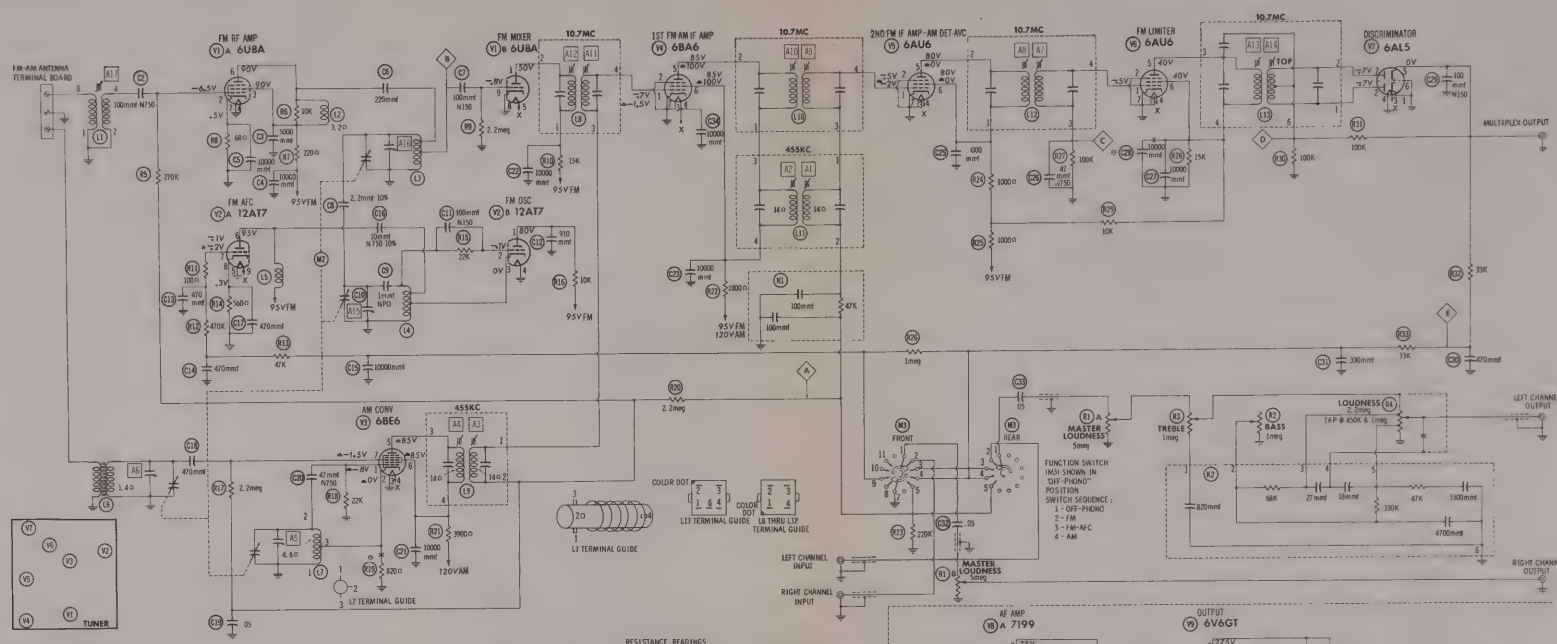


TUNER CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6U8A	†16K	2.7meg	†1000Ω	0Ω	.2Ω	†1000Ω	68Ω	0Ω	2.2meg
V2	12AT7	††11K	22K	.2Ω	0Ω	0Ω	†780Ω	520K ●1.8meg	560Ω	.2Ω
V3	6BE6	▲22K	▲.9Ω	0Ω	.2Ω	†▲4700Ω	†▲4700Ω	▲.4meg		
V4	6BA6	2.4meg	0Ω	0Ω	.2Ω	†1800Ω	†1800Ω	0Ω		
V5	6AU6	270K	0Ω	0Ω	.2Ω	†2800Ω	†2800Ω	0Ω		
V6	6AU6	100K	0Ω	0Ω	.2Ω	†8000Ω	†8000Ω	0Ω		
V7	6AL5	0Ω	100K	.2Ω	0Ω	200K	0Ω	100K		
V8	7199	††170K	††290K	††1meg	2Ω	0Ω	82Ω	6.8meg	1500Ω	47K
V9	6V6GT	NC	0Ω	††310Ω	††1600Ω	520K	NC	.1Ω	200Ω	
V10	6V6GT	NC	0Ω	††310Ω	††1600Ω	470K	NC	.1Ω	200Ω	
V11	5Y3GT	NC	¶	NC	80Ω	NC	80Ω	NC	¶	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
- MEASURED IN "AM" POSITION.
▲ MEASURED IN "FM-AFC" POSITION.
NC NO CONNECTION
† MEASURED FROM OUTPUT OF M1.
†† MEASURED FROM PIN 8 OF V11.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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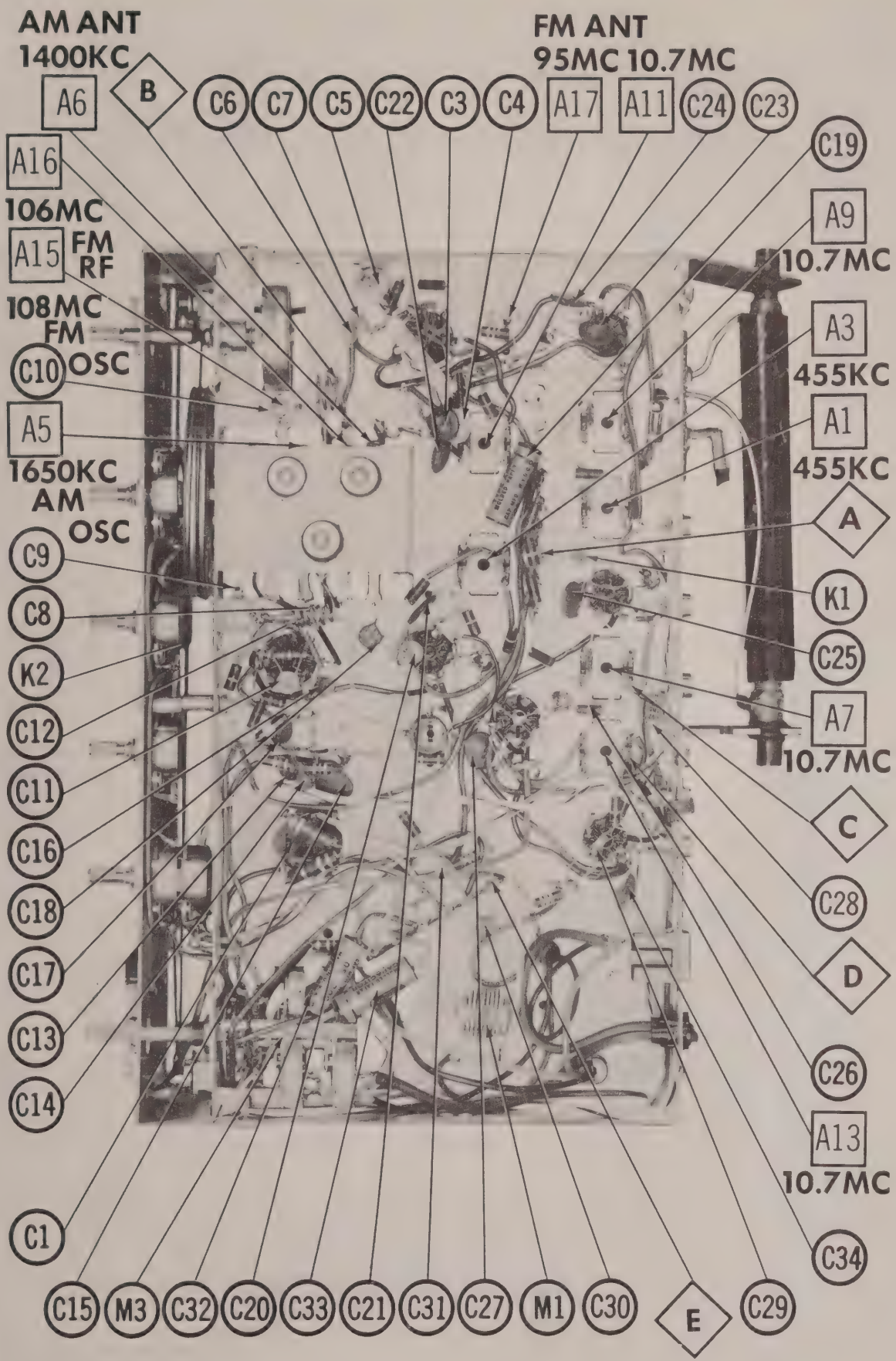
SYLVANIA MODELS SC05, SC08, 4315, 4318, 4321, 4705 Series (Ch. 1-633-1, 1-636-1)



TUNER CHASSIS BOTTOM VIEW
ALIGNMENT, CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4, A7 thru A14.....GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A6, A16 .....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

A15, A17.....GENERAL CEMENT #8721, 8722
WALSCO #2519

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 1 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully closed.	AC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC signal.	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .001mfd to point (B). Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (C). Common to chassis.	A7, A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point (D). Common to chassis.	A13	"
6.	"	"	"	DC probe to point (E). Common to chassis.	A14	Adjust for zero reading. A positve and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .001mfd to point (B). Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (C). Low side to chassis.	A7, A8, A9, A10, A11, A12	Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown.
5.	"	"	"	Vert. amp. thru 27K to point (D). Low side to chassis.	A13	"
6.	"	"	"	Vert. amp. to point (E). Low side to chassis.	A14	Adjust to place marker at the center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 270Ω in high side.	108MC (Unmod.)	(FM) 108MC	DC probe to point (C). Common to chassis.	A15	Adjust for maximum deflection.
8.	"	106MC	106MC	"	A16	Adjust for maximum deflection while rocking tuning gang.
9.	"	95MC	95MC	"	A17	Adjust for maximum deflection.

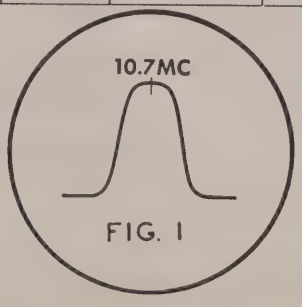


FIG. 1

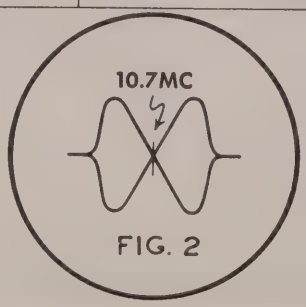


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

• CBS •	GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Mixer	6U8A
V2	FM AFC-FM Osc.	12AT7
V3	AM Converter	6BE6
V4	1st FM IF Amp- 1st AM IF Amp.	6BA6
V5	2nd FM IF Amp- AM Det. - AVC	6AU6
V6	FM Limiter	6AU6
V7	Discriminator	6AL5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	200	161-3040	AFH3-43-50	CO344	FP318.74	TMT-39	TVL-3786	
B	■40	200							
C	▲20	200							

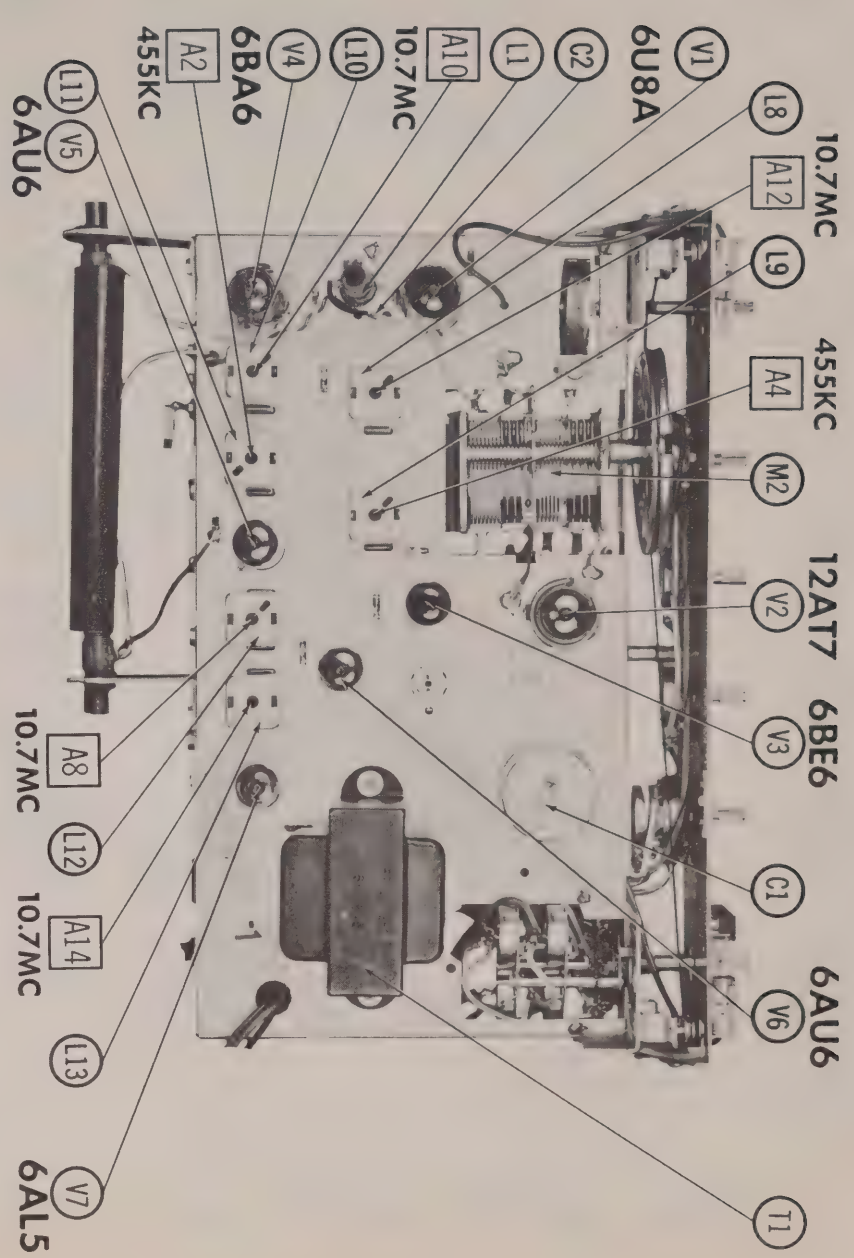
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C3	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C6	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C7	100 N150					*		10TCR-T10
C8	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C9	1 NPO		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C10		#172-0041						
C11	100 N150					*		10TCR-T10
C12	910			DD-911	L10T91	CM-20B-911M		1FM-391
C13	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C14	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C16	10 N750 10%		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C17	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C18	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C19	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C20	47 N750		N750-DI 47	DTN-470	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C28	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C29	100 N150					*		10TCR-T10
C30	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C31	330		BPD-00033	DD-330	L10T33	CCD-331	GP333	10TS-T33
C32	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C33	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S1

Sylvania Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

TUNER CHASSIS—TOP VIEW



TUNER PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg	½	153-0196	B-87	AD47-5meg-S		FA56L	Master Loudness, Left Ch.
B	5meg	½		SR-87	Not Req.		RU56L	Master Loudness, Right Ch.
C	Shaft			Not Req.	KSS-3		CS3500	
R2A	1meg	½	153-0197	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1meg	½	153-0197	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4	2.2meg*	½	153-0198	BT-175		Q13-139XX	UDT-296	Loudness, Channel 1 (Left)

* Taps ⓐ 450K and 1meg.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	270K	
R6	10K	
R7	220Ω	
R8	68Ω	
R9	2.2meg	
R10	15K	
R11	100Ω	
R12	470K	
R13	47K	
R14	560Ω	
R15	22K	

ITEM No.	RATING	REMARKS
R16	10K	
R17	2.2meg	
R18	22K	
R19	820Ω	Note 1
R20	2.2meg	
R21	3900Ω	
R22	1000Ω	
R23	220K	
R24	1000Ω	
R25	1000Ω	
R26	1meg	

ITEM No.	RATING	REMARKS
R27	100K	
R28	15K	
R29	10K	
R30	100K	
R31	100K	
R32	33K	
R33	33K	
R34	390Ω 1W	
R36	390Ω 1W	

Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA	
K1	AM Det. RF Filter	100mmf, 100mmf, 47K	190-0044	Aerovox	PA-97
				Centralab	PC-50
				Cornell-Dubilier	111TM1
				Sprague	D-1
K2	Tone Comp.	18mmf, 27mmf, 820mmf, 3300mmf, 4700mmf, 47K, 68K, 330K	190-0030		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SYLVANIA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	111-0029						
L2	RF Choke	145-0032	19-1008	19-1008	SW-631	4609		5.6uh
L3	FM RF Coil	112-0018						
L4	FM Osc. Coil	113-0048						
L5	RF Choke	145-0033						3uh
L6	AM Loopstick	581-0018			BC-418 *			
L7	AM Osc. Coil	113-0049			BC-393			
L8	1st FM IF Trans.	121-0034	16-3487	16-3487	FM-254	1463	*	
L9	1st AM IF Trans.	121-0033	16-6758	16-6758	BC-352	12-C1	RF-1	
L10	2nd FM IF Trans.	121-0034	16-3487	16-3487	FM-254	1463		
L11	2nd AM IF Trans.	121-0033	16-6758	16-6758	BC-353	12-C2	RF-2	
L12	3rd FM IF Trans.	121-0034	16-3487	16-3487	FM-254	1463		
L13	Discriminator	128-0016	17-3494	17-3494	FM-253	1464		

* Use Original Mounting Brackets.

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA						
	PRI.	SEC. 1	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117Vⓐ .26A	110Vⓐ .035A Tapⓐ6.3Vⓐ2.4A	141-0080						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	SYLVANIA PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.035A	517-0022 *	T150 *	1235AH *	150 *	SR200 ♦	* Selenium Type ♦ Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	Tuning Cap.	170-0032	2 Gang (Ant. 15-258mmf, Osc. 17-127mmf)
M3	Switch	577-0006	Function, Rotary Wafer Type (Wafer Part #571-0033)

AMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V8	AF Amp-Phase Inverter	7199	V10	Output	6V6GT
V9	Output	6V6GT	V11	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C35A	▲20	450	161-4027	AFH4-92-50	DO624	FP433.4	TMQ-90	TVL-4771.6	
B	■40	450							
C	▲20	450							
D	10	50							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C36	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C37	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C38	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C39	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C40	.001 600V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D1
C41	.001 600V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D1
C42	2mfd 50V		P282Z-2.0		MP2W2			118P20502S2

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R36	6.8meg	
R37	220K	
R38	1meg	
R39	82Ω	
R40	470K	

ITEM No.	RATING	REMARKS
R41	47K	
R42	100K	
R43	1500Ω	
R44	470K	
R45	200Ω 5W	

ITEM No.	RATING	REMARKS
R46	68K	
R47	1500Ω 1W	
R48	100Ω 2W	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V@ .58A	590 VCT @.075A	5V@ 2A	141-0068	22R04	P-3052		PM 8405	22R04	R-12B
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 1.3A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	9100Ω	3-4Ω	143-0048	26S59	A-3027	AU-609	A-3870	26S59	S-55X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	15"	PM	8-10Ω	539-1502	15A10L	
SP2	10"	PM	6-8Ω	539-1010	10A31PA	
SP3	4"	PM	12-14Ω	539-0407	4A1T	
SP4	4"	PM	12-14Ω	539-0407	4A1T	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	SYLVANIA PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M4		13T	Not Req.	13	Not Req.			10T2-S	Not Req.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SYLVANIA PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M5		* W-204DS †♦ or * W-204DD-1♦	* A-44X † or * A-44XSD †♦ or * A-44XDD ♦	† Jewel ♦ Diamond * Includes Cartridge

AMP PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M6	Switch		Monaural-Stereo (SPDT Slide Type) Part of Changer
M7	Switch		Off-On Reject (Part of Changer)
M8	Motor		Phono Drive (Part of Changer)

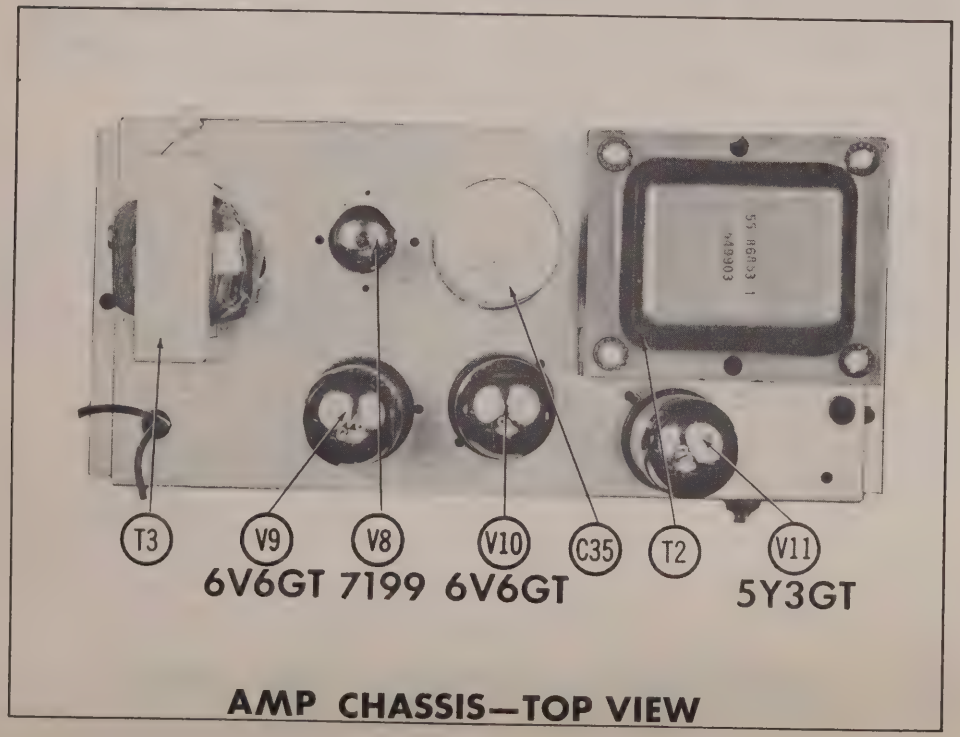
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	740-0259	Tuning, Volume, Master Gain, Bass, Treble
Knob	740-0285	Function Selector
Dial Glass	721-0027	
Dial Pointer	792-0026	

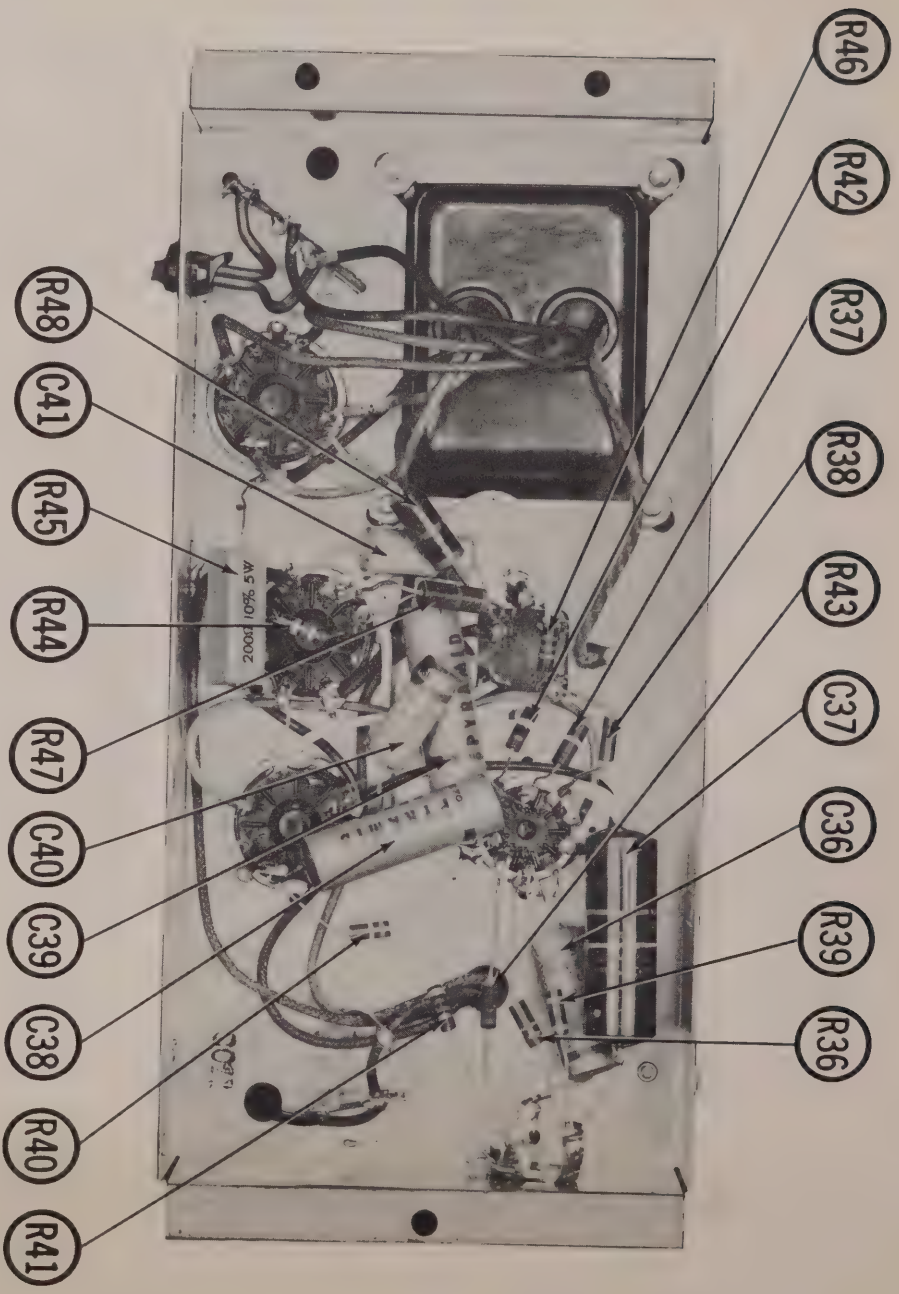
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)



AMP CHASSIS—TOP VIEW

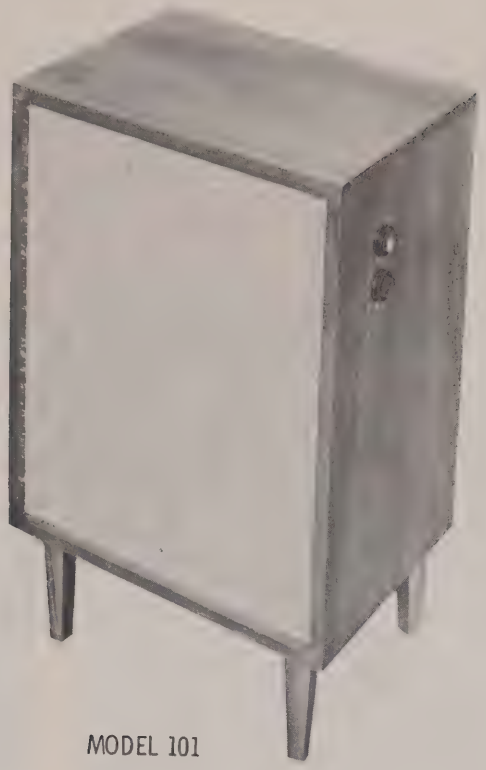
AMP CHASSIS—BOTTOM VIEW



PHOTOFACT® Folder

V-M MODELS
101, 102, 103, 104

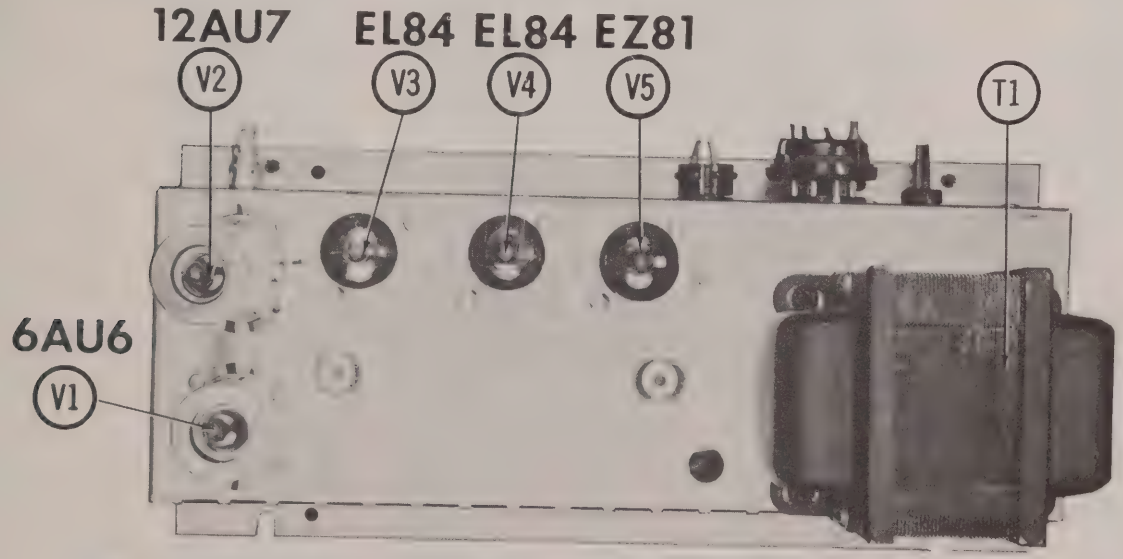
V-M MODELS
101, 102, 103, 104



MODEL 101

V-M MODELS
101, 102, 103, 104

TRADE NAME	V-M Models 101, 102, 103, 104
MANUFACTURER	V-M Corp., Benton Harbor, Michigan
TYPE SET	AC Operated 5 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 52 Watts, .52 Amp. @ 117 Volts AC



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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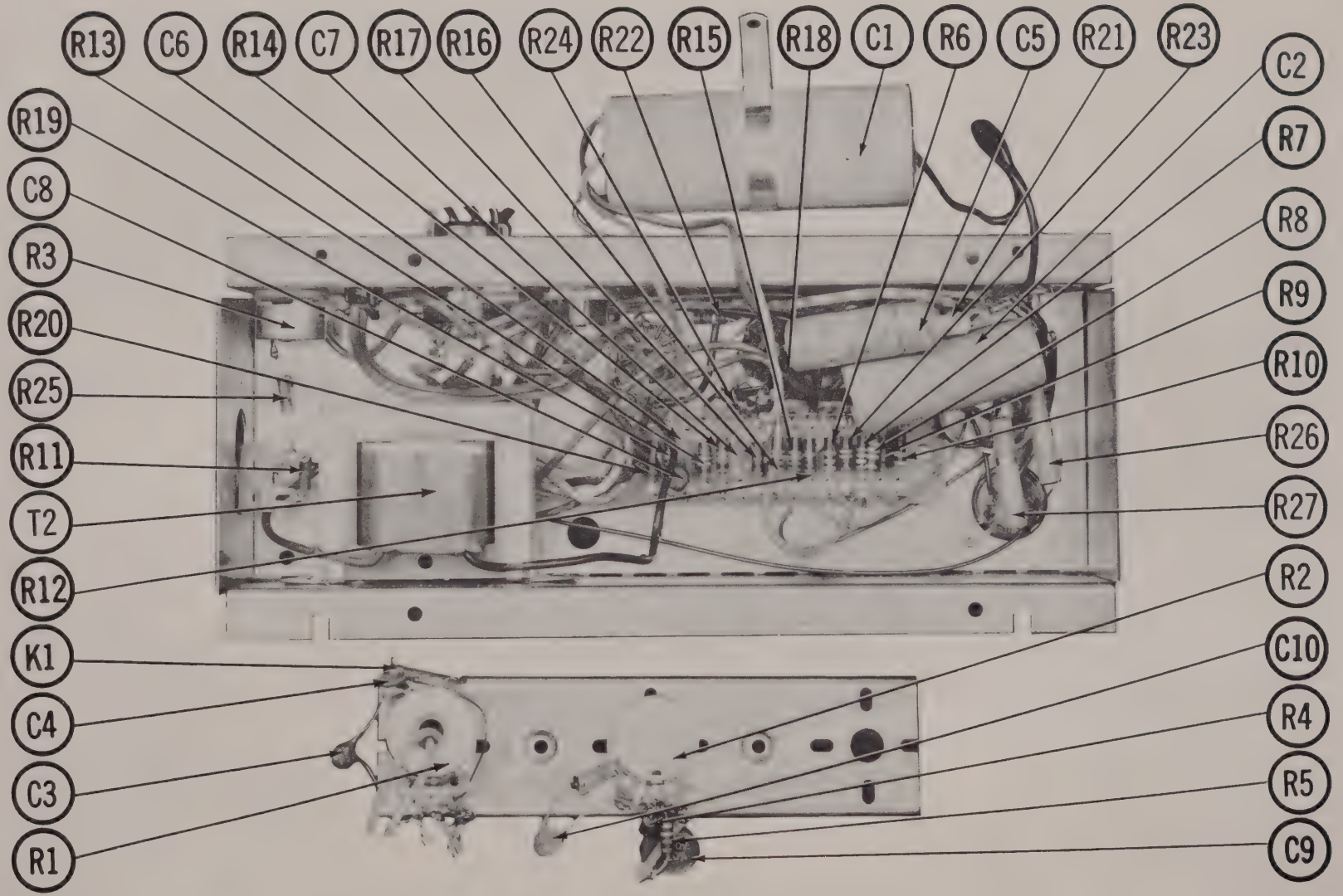
JX619

SET 479 FOLDER 16



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	AF Amplifier	6AU6
V2	AF Amp-Phase Inv.	12AU7
V3	Output	EL84 (6BQ5) *
V4	Output	EL84 (6BQ5) *
V5	Rectifier	EZ81

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	450	12107	PR4-185	BBRD4445	WQ775	TDLD-31	TVA-4748	
B	40	450			BBR10-25		TD-10-25		
C	10	25							
C2	10	400	12106	PRS1720	BR1045	TC72	TD-10-450	TVA-1705	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C4	5000 10%		DI-5000		PM6D5	CCD-502	JL250	10TS-D50
C5	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C8	200 10%		DI-200	DD-201		CCD-201	GP320	10TS-T20
C9	3500 10%		DI-3300		PM6D33	CCD-332	JL233	10TS-D33
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C11	2mfd 100V		P282Z-2.0		MP2W2			118P20502S2

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K *	½	12348					Loudness
B	Switch							Power Off-On
R2A	1meg	½	12347	F1-52			■ UE3833	Bass
B	1meg	½		R2-52				Treble
R3A	150Ω	1(WW)	12361	WN-201	A43-150	WPK-200	FL200P	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

* Taps @ 150K & 300K.
■ "STA-LOC" equivalent: FB16A, RU16A, OS812, IS1187.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	22K	
R5	22K	
R6	470K	
R7	390K	
R8	330K	
R9	100Ω	
R10	3300Ω	
R11	150Ω	

ITEM No.	RATING	REMARKS
R12	1.2meg	
R13	100K	
R14	100K	
R15	68K	
R16	330K	
R17	1000Ω	
R18	1000Ω	
R19	330K	

ITEM No.	RATING	REMARKS
R20	1000Ω	
R21	200Ω 2W	
R22	1000Ω	
R23	15K	
R24	10K	
R25	10K	
R26	2.2Ω 1W	
R27	2.2Ω 1W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	V-M PART No.	REPLACEMENT DATA
K1	Input Comp.	(2) 5000mmf, (2) 47K	12569	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .52A	580 VCT @ .070A	6.3V @ .9A	12582						
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT @ 2.25A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	8000Ω CT	3-4Ω	12553	22S56	A-3027	AU-609	A-3824	22S56	S-55X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA V-M PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	10"	PM	3-4Ω	19931-1①	10A4PA	
SP2	3½"	PM	8-10Ω	18558	3A15TZ9.8	

① Some versions may use Part #19931 in this application.

CABINETS & CABINET PARTS

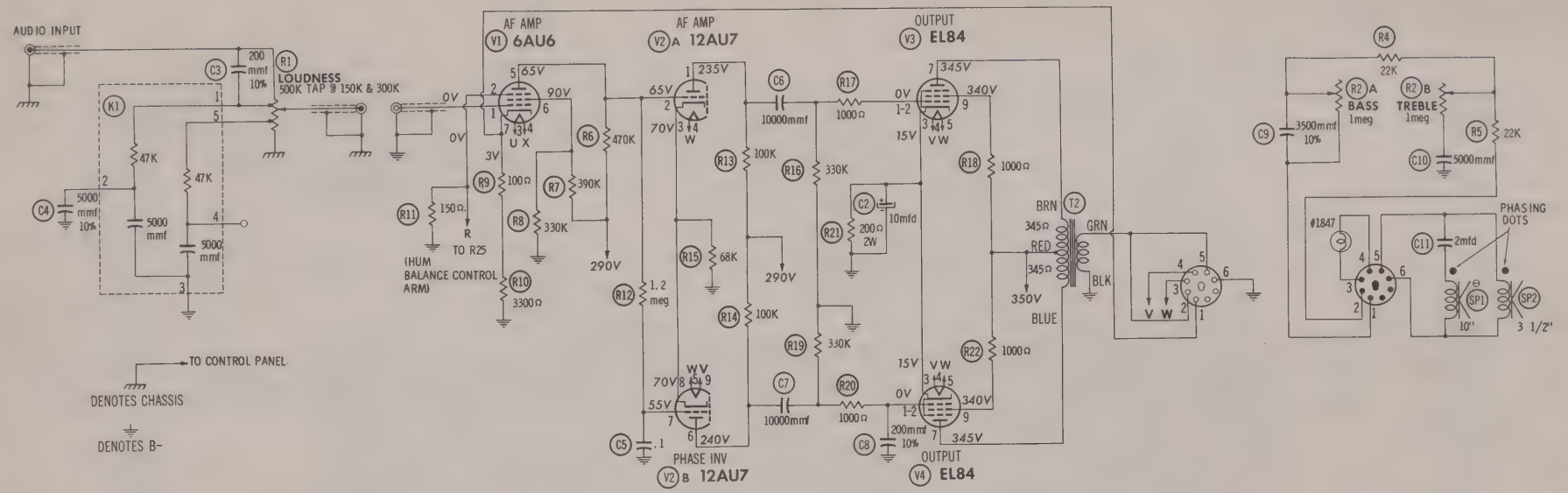
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

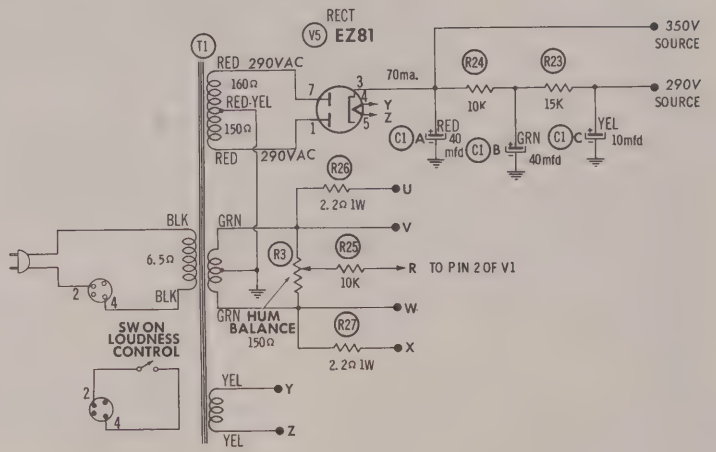
NAME	PART NO.	DESCRIPTION
Knob	15134-B	Volume
Knob	15135-B	Brilliance
Cabinet	19891-B	Model 101-B
Cabinet	19891-W	Model 101-W
Cabinet	19892-M	Model 102-M
Cabinet	19893-B	Model 103-B
Cabinet	19893-W	Model 103-W
Cabinet	19893-M	Model 103-M
Cabinet	19894-C	Model 104-C
Cabinet Leg	16875-A	Model 101-B
Cabinet Leg	16875-B	Model 101-W
Cabinet Leg	18677-A	Model 102-M
Cabinet Leg	9571-B	Model 103-B
Cabinet Leg	9571-W	Model 103-W
Cabinet Leg	9571-M	Model 103-M

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6	0Ω	150Ω	1.5Ω	1.5Ω	†495K	†280K	3400Ω		
V2	12AU7	†125K	†495K	68K	.1Ω	.1Ω	†125K	†1.7meg	68K	.1Ω
V3	EL84	330K	330K	200Ω	.1Ω	.1Ω	NC	†345Ω	NC	†1000Ω
V4	EL84	330K	330K	200Ω	.1Ω	.1Ω	TP	†345Ω	TP	†1000Ω
V5	EZ81	150Ω	NC	¶	INF	INF	NC	160Ω	NC	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V5.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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V-M MODELS
101, 102, 103, 104

PHOTOFACT® Folder with CIRCUITRACE®

WEBCOR MODELS CP1990-1, EP1990-1 (Ch. 14X313, 73X014-2)

WEBCOR MODELS CP1990-1, EP1990-1 (Ch. 14X313, 73X014-2)

MODEL EP1990-1

WEBCOR MODELS CP1990-1, EP1990-1 (Ch. 14X313, 73X014-2)

TRADE NAME	Webcor Models CP1990-1, EP1990-1 (Tuner Ch. 73X014-2, Amp. Ch. 14X313)
MANUFACTURER	Webcor, Inc., 5610 W. Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated 5 Tube AM Tuner And Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105-120 Volts AC, 60 Cycles
RATING	33 Watts, .35 Amp. @ 117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	535 — 1620KC

FOR SERVICE INFORMATION ON RECORD CHANGER E168-25 — SEE SIMILAR WEBCOR 171 — PHOTOFACT SET 447 FOLDER 13

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4, A6.....GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A7.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	Loop	600KC	600KC	"	A6	"
4.	"	1400KC	Tune to 1400KC signal	"	A7	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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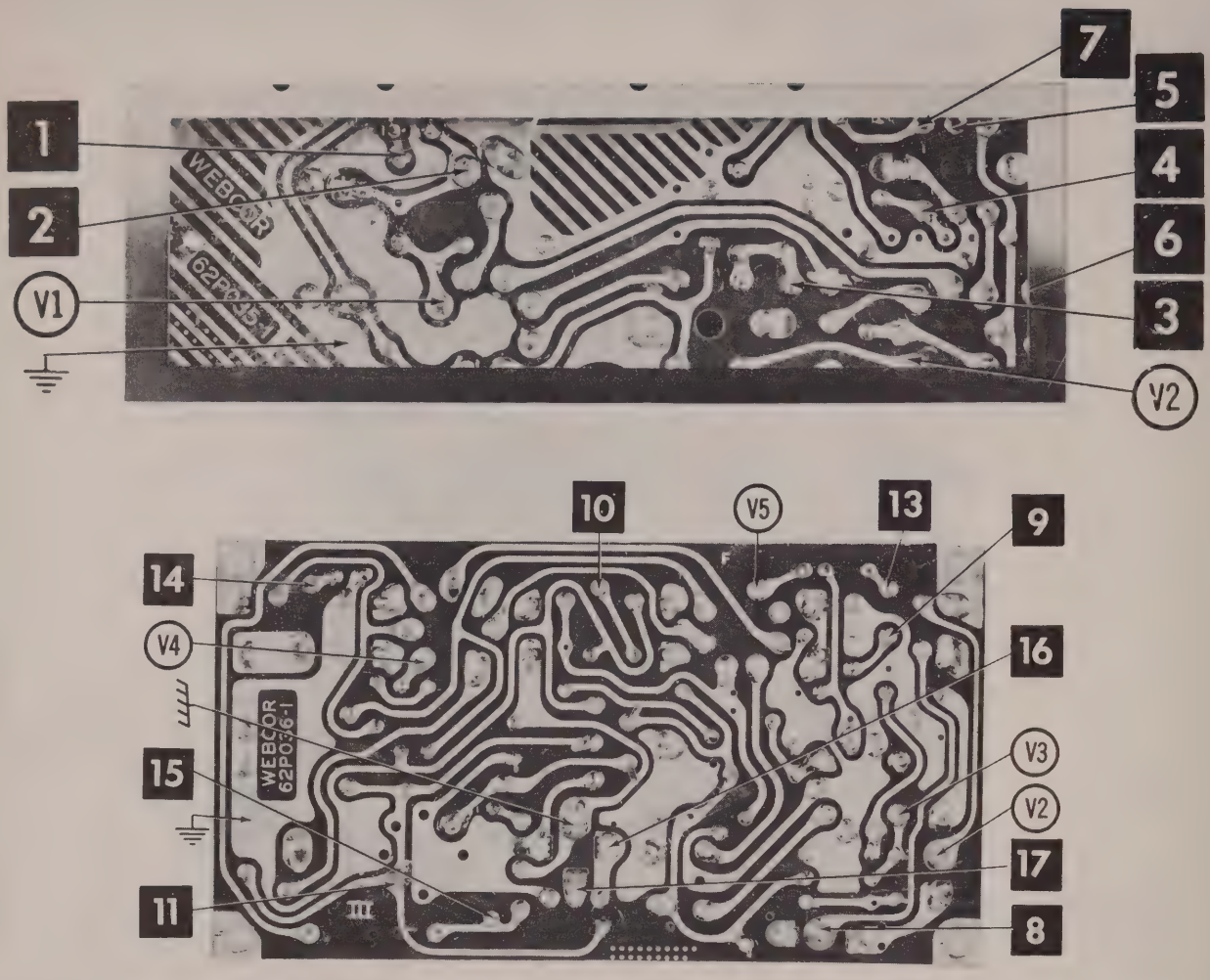
SET 479 FOLDER 17



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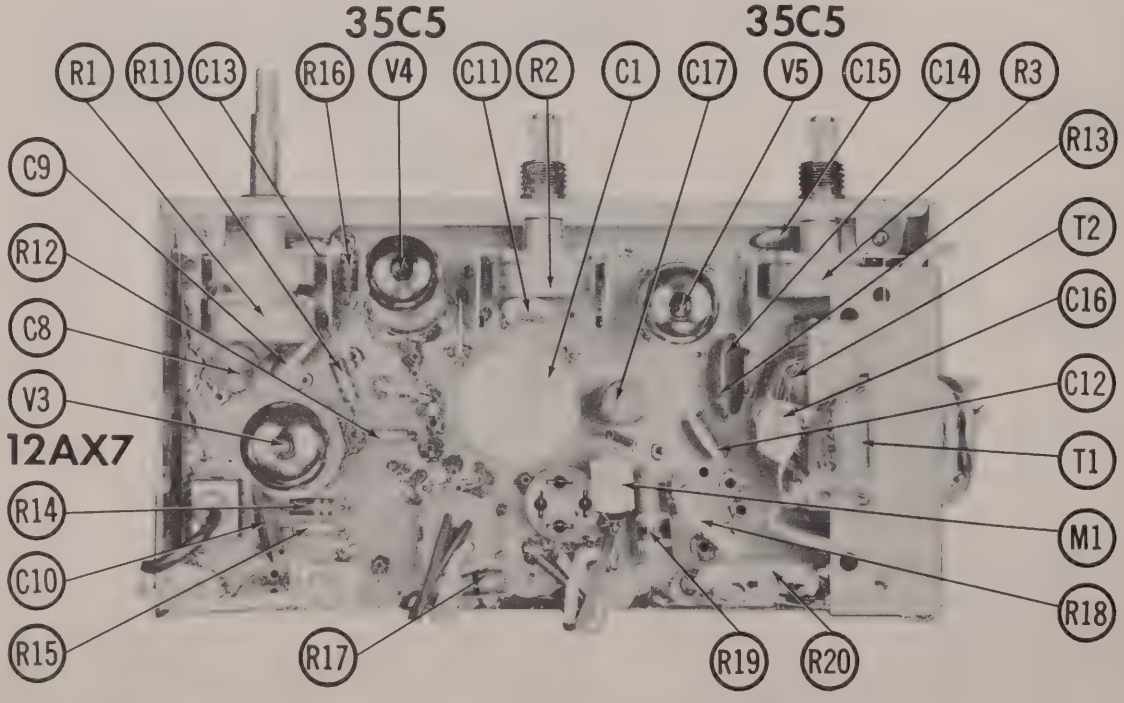
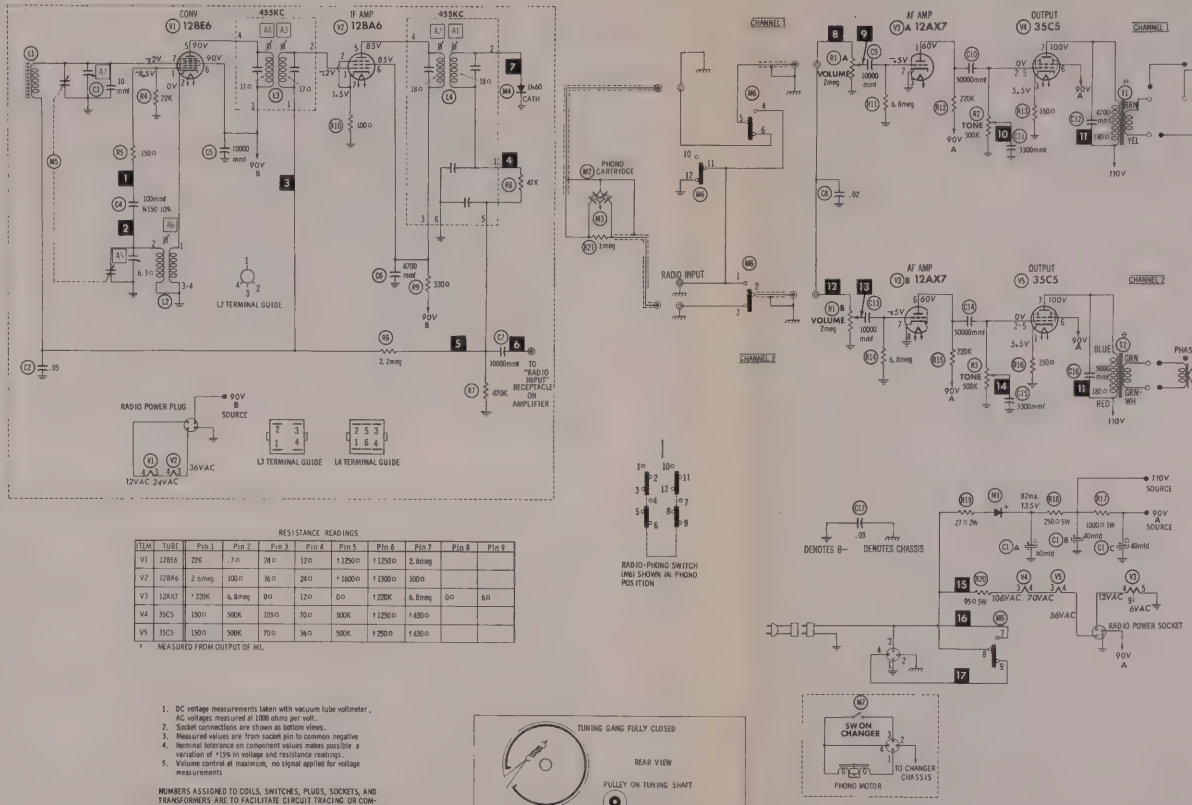
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



AMP. CHASSIS - TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BE6	22K	0	24Ω	12Ω	†1250Ω	†1250Ω	2.6meg		
V2	12BA6	2.6meg	100Ω	36Ω	24Ω	*1600Ω	†1300Ω	100Ω		
V3	12AX7	*220K	6.8meg	0Ω	12Ω	0Ω	†220K	6.8meg	0Ω	6Ω
V4	35C5	150Ω	500K	105Ω	70Ω	500K	†125Ω	†430Ω		
V5	35C5	150Ω	500K	70Ω	36Ω	500K	†125Ω	†430Ω		

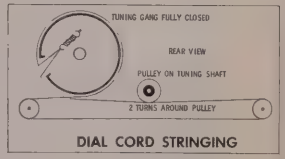
† MEASURED FROM OUTPUT OF M1.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



DIAL CORD STRINGING

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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WEBCOR MODELS CP1990-1, EP1990-1 (Ch. 14X313, 73X014-2)

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	QUAM PART No.	
SP1	3"x 5"	PM	3-4Ω	76P091	35A05	
SP2	3"x 5"	PM	3-4Ω	76P091	35A05	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	WEBCOR PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.082A	65P155	SD500	HA154	K200	SR200	Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	WEBCOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M2		13T	Not Req.	13	Not Req.			10T2-S	Not Req.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M3		* W-204DS †♦ or * W-204DD-1 ♦	* A-44X † or * A-44XSD †♦ or * A-44XDD ♦	† Jewel ♦ Diamond * Includes Cartridge

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		WEBCOR PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	1N60	65P119	1160	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M5	Tuning Cap.	30P347	2 Gang
M6	Switch	32P135	Function (2-Ganged, DPDT, Slide Type)
M7	Switch	32P133	Off-On (Part of Changer)

CABINETS & CABINET PARTS

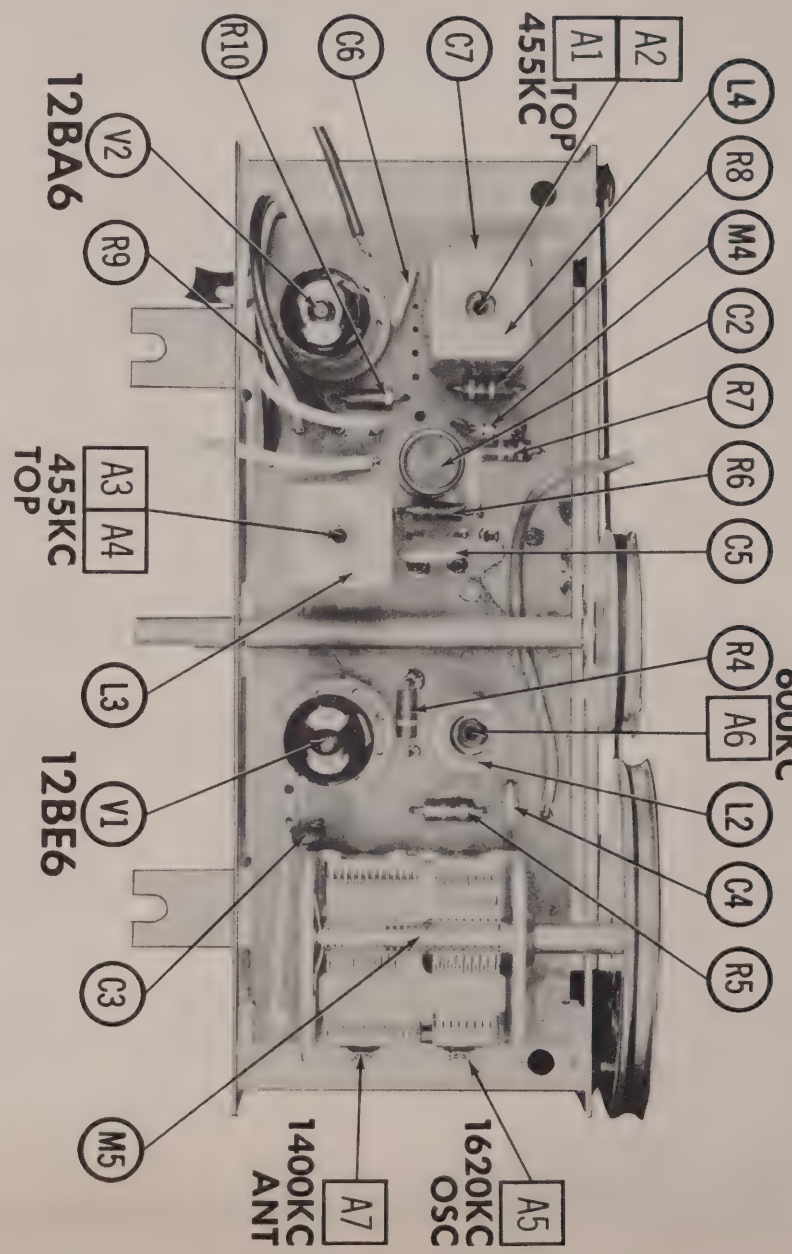
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob Ass'y.	49X331	Tuning
Knob Ass'y.	39P231	Volume (Outer)
Knob Ass'y.	39P228-1	Volume (Inner)
Knob Ass'y.	39X230-2	Tone (Channel 2)
Knob Ass'y.	39X230-1	Tone (Channel 1)
Dial Pointer	45P2634	
Case Assembly	92X105-1	Coral
Case Assembly	92X105-2	Black
Handle	39P049-6	Coral
Handle	39P049-1	Black

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUNER CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

ZENITH
MODEL Royal 950 (Ch. 7AT46Z1)

ZENITH
MODEL Royal 950 (Ch. 7AT46Z1)

ZENITH
MODEL Royal 950 (Ch. 7AT46Z1)

TRADE NAME	Zenith Model Royal 950 (Ch. 7AT46Z1)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Battery Operated Transistorized AM Receiver With Clock
POWER SUPPLY	6 Volts DC (Radio), 1.5 Volts DC (Clock)
RATING	7MA @ 6 Volts DC (No Signal, Min. Volume) 15MA @ 6 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1, A2, A3, A5.....GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537
A4, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice Coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A4	"
3.	"	535KC	Tuning gang fully closed.	"	A5	Adjust for maximum output. Repeat Steps 2 and 3.
4.	"	1260KC	1260KC	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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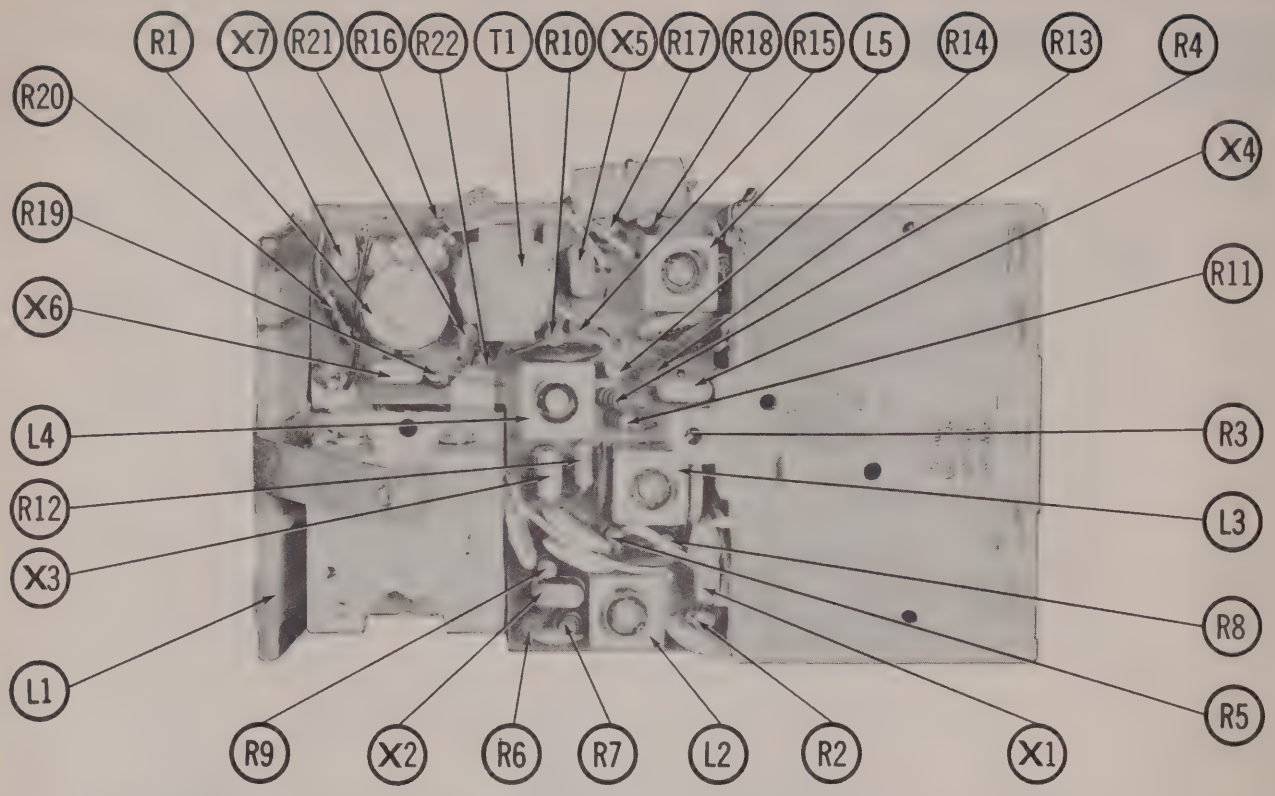
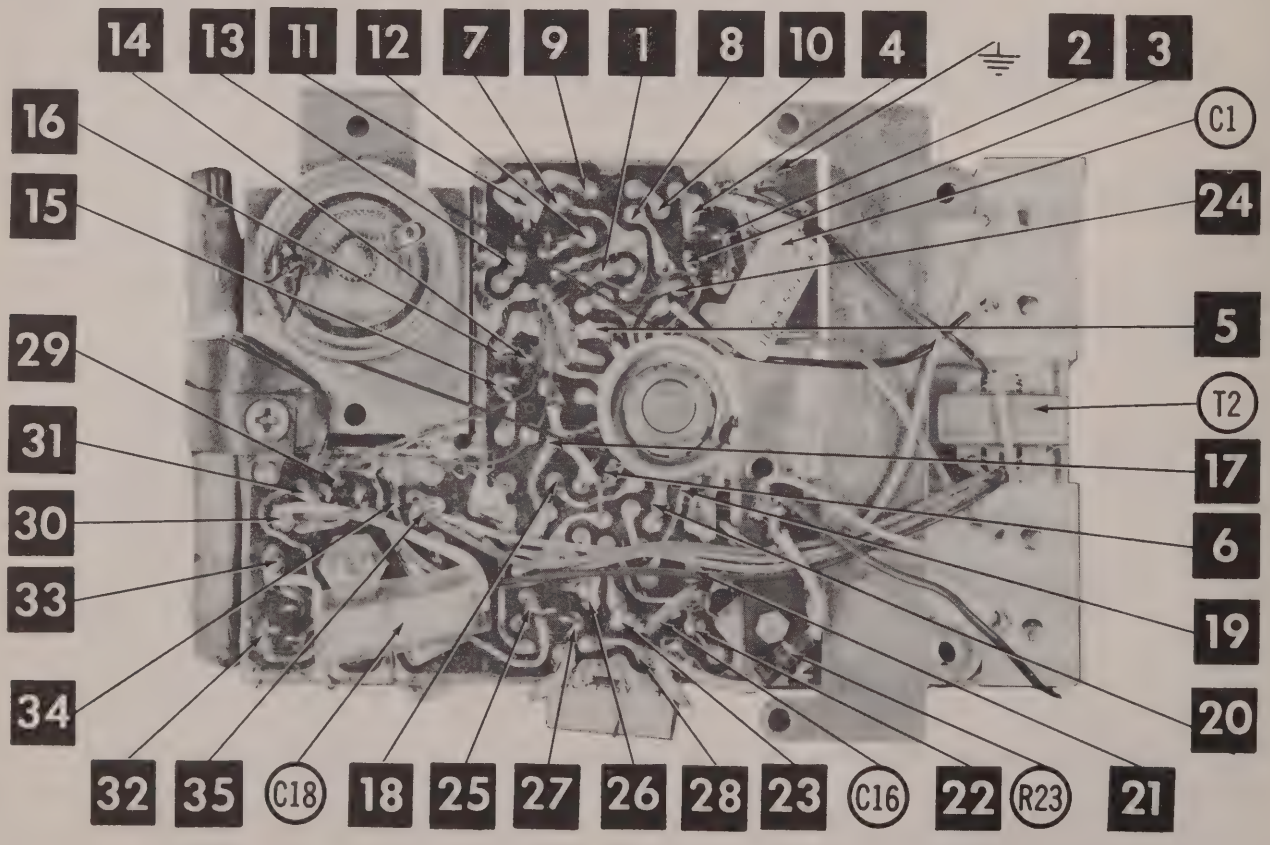
JG553

SET 479 FOLDER 18



CHASSIS TOP VIEW – RESISTOR, INDUCTOR & TRANSISTOR IDENT.



A Howard W. Sams CIRCUITRACE® Photo

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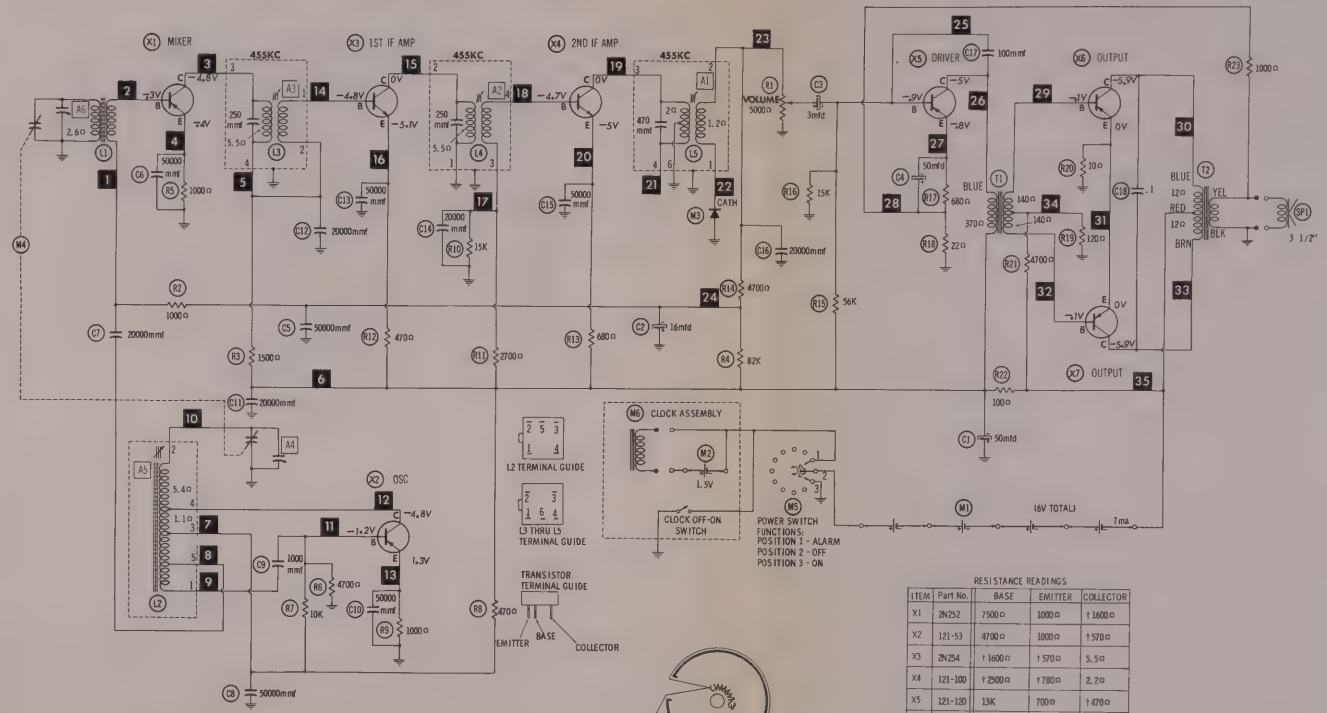

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	Part No.	BASE	EMITTER	COLLECTOR
X1	2N252	7500Ω	1000Ω	†1600Ω
X2	121-53	4700Ω	1000Ω	†570Ω
X3	2N254	†1600Ω	†570Ω	5.5Ω
X4	121-100	†2500Ω	†780Ω	2.2Ω
X5	121-120	13K	700Ω	†470Ω
X6	121-19	280Ω	10Ω	†12Ω
X7	121-19	280Ω	10Ω	†12Ω

† MEASURED FROM JUNCTIONS OF R21, R22.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ZENITH
MODEL Royal 950 (Ch. 7AT46Z1)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	MFGR. PART NO.	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	121-54	Mixer (2N252)			2N486		PNP
X2	121-53	Oscillator (R119)			2N485		PNP
X3	121-51	1st IF Amplifier (2N254)	2N439		2N483		NPN
X4	121-100	2nd IF Amplifier (S028)			2N482		NPN
X5	121-120	Driver (R119)		2N406	2N362		PNP
X6	121-19	Output (R16)		2N408	2N632		PNP } Matched
X7	121-19	Output (R16)		2N408	2N632		PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	50	6	22-2726	PWE6050	EC50-6	TT6X50	ML50-6	TE-1100	
C2	16	3	22-2871	PWE3015	EC15-6	TT6X15	ML20-6	TE-1053.5	
C3	3	12	22-2884	PWE2884	EC5-15	TT12X3	ML4-15	TE-1122	
C4	50	6	22-2726	PWE6050	EC50-6	TT6X50	ML50-6	TE-1100	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C6	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C8	50000		BPD-05	DD-503	H-05S2		GP150	5HK-S50
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C10	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C11	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C12	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C13	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C14	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C15	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C16	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C17	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C18	.1 50V		V84C2P1		WMF1P1E		GEM-201	2WF-P10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	63-4400	JP-502				Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	1500Ω	
R4	82K	
R5	1000Ω	
R6	4700Ω	
R7	10K	
R8	470Ω	
R9	1000Ω	

ITEM No.	RATING	REMARKS
R10	15K	
R11	2700Ω	
R12	470Ω	
R13	680Ω	
R14	4700Ω	
R15	56K	
R16	15K	
R17	680Ω	

ITEM No.	RATING	REMARKS
R18	22Ω	
R19	120Ω	
R20	10Ω	
R21	4700Ω	
R22	100Ω	
R23	1000Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ZENITH PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	S-47375						
L2	Osc. Coil	95-1513						
L3	1st IF Trans.	95-1514						
L4	2nd IF Trans.	95-1515						
L5	3rd IF Trans.	95-1576						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	95-1518						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	130Ω CT	3-4Ω	95-1635							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	49-866	3AQ5	

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	Z-8		Z		1015		M-15R	4 Required (Radio)
M2	1.5V	Z-2NL		230		A100		M-13R	1 Required (Clock)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3		103-24	1N60	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Tuning Cap.	22-3094	2 Gang (Ant. 8—128mmf, Osc. 6—80mmf)
M5	Switch		Power On-Off, Part of M6
M6	Clock Ass'y.	172-2B	Includes Movement, Timer, & Alarm Switch
M7	Magnet	149-217	Door Latch
	Earphone	B39-24	

CABINETS & CABINET PARTS

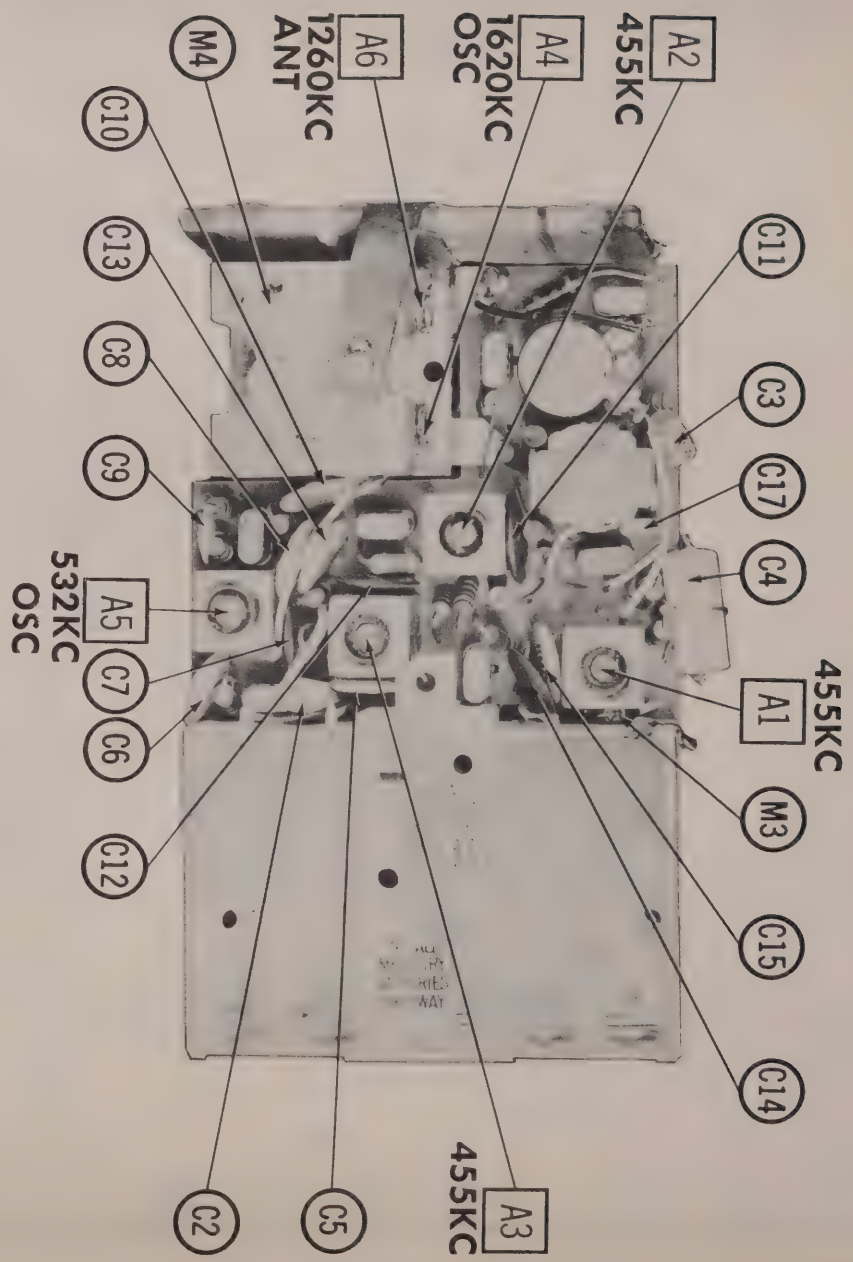
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

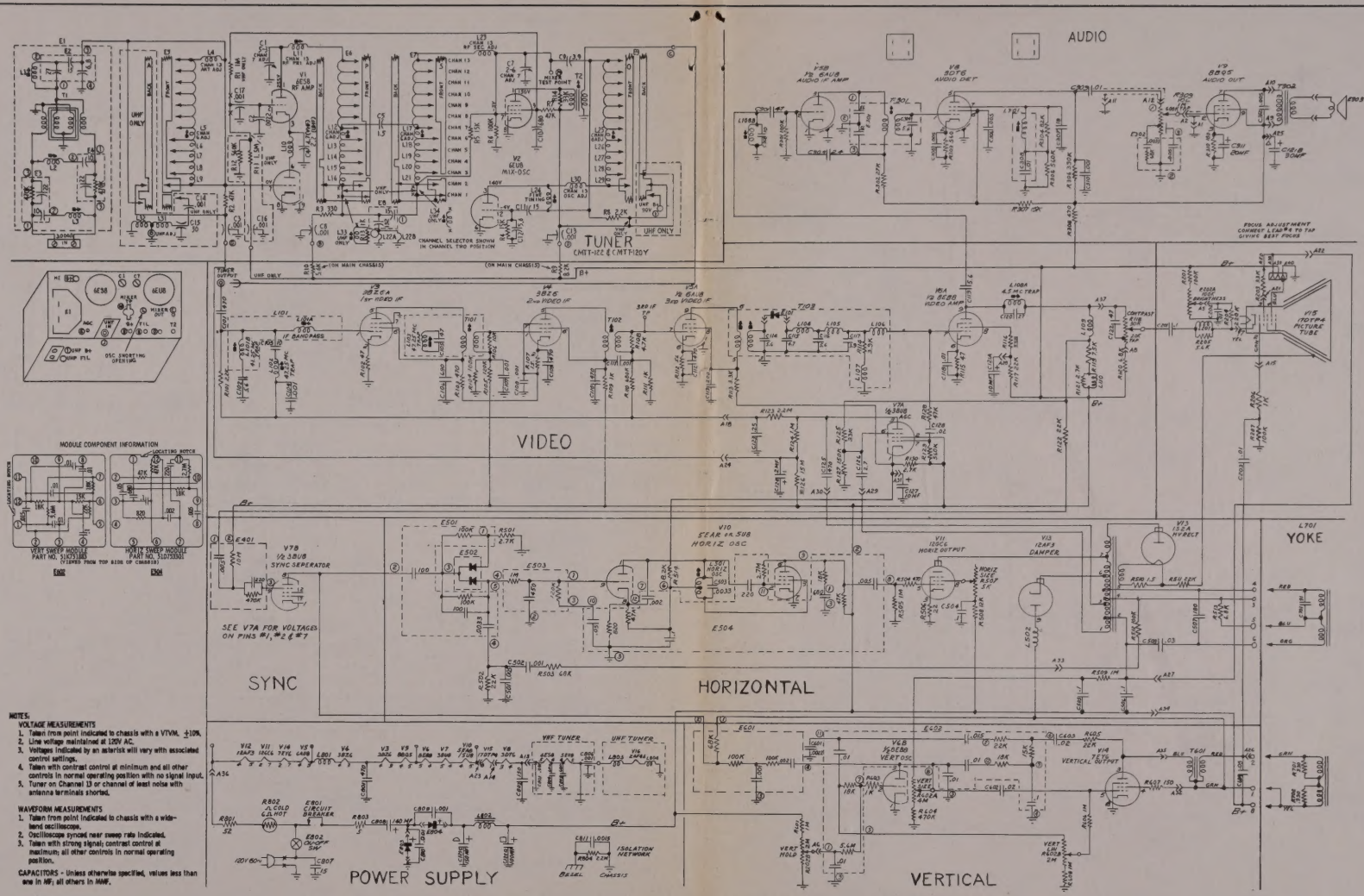
NAME	PART NO.	DESCRIPTION
Knob	S-46890	Tuning, Volume (Includes Ring Assembly)
Knob	46-1969	Clock Set
Crystal & Knob	S-43687	Assembly
Clock Dial	26-615	
Radio Dial	26-616	
Radio Door	57-2583	
Handle	36-219	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

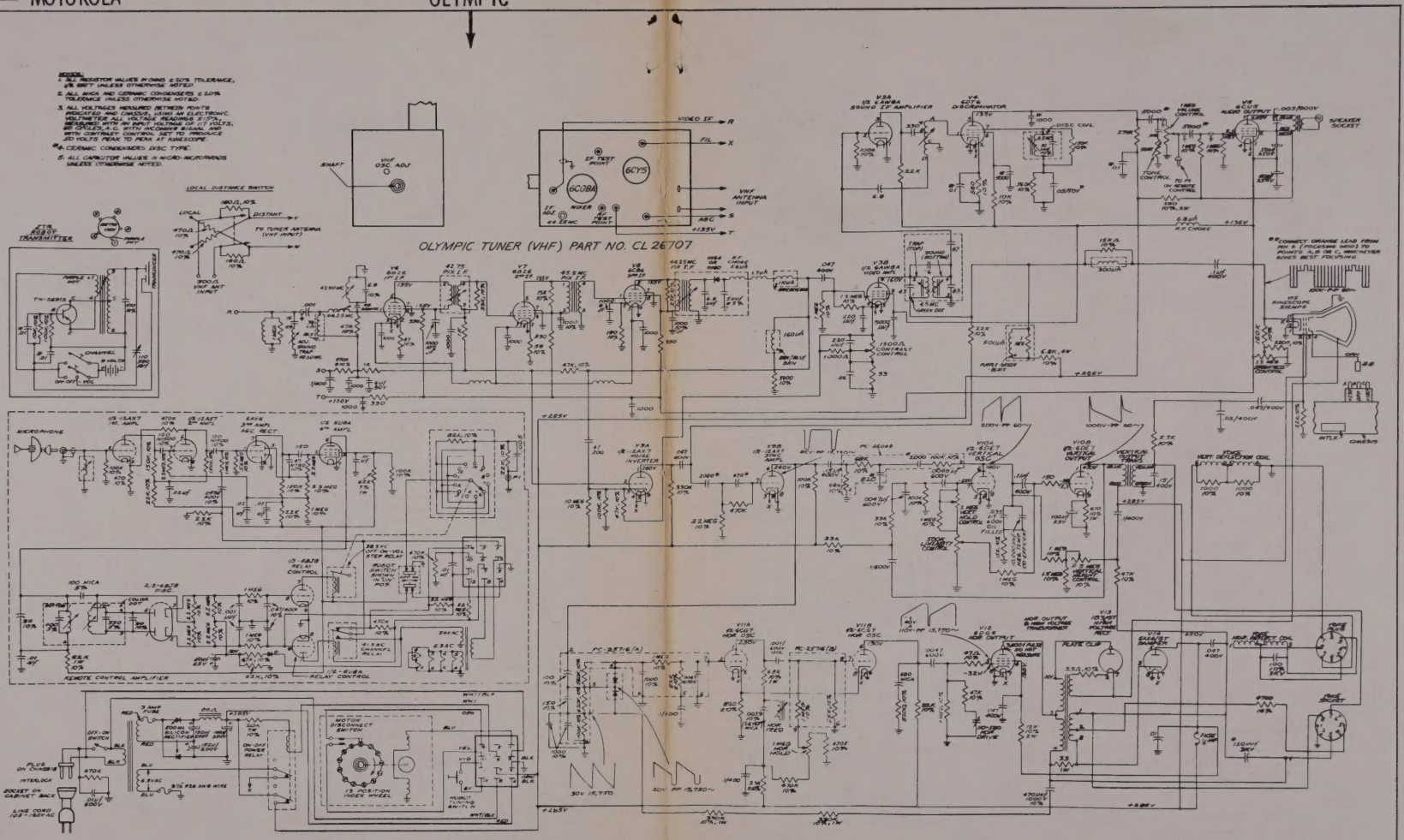
CHASSIS—TOP VIEW




AUDIO
TUNER
CMTT-122 & CMTH120Y
VIDEO
SYNC
HORIZONTAL
VERTICAL
POWER SUPPLY
YOKE
MODULE COMPONENT INFORMATION
VERT SWEEP MODULE PART NO. 3107T1180
HORIZ SWEEP MODULE PART NO. 3107T3001
SEE V7A FOR VOLTAGES ON PINS #1, #2 & #7
NOTES:
VOLTAGE MEASUREMENTS
1. Taken from point indicated to chassis with a VTVM, ±10%.
2. Line voltage maintained at 120V AC.
3. Voltages indicated by an asterisk will vary with associated control settings.
4. Taken with contrast control at minimum and all other controls in normal operating position with no signal input.
5. Tuner on Channel 13 or channel of least noise with antenna terminals shorted.
WAVEFORM MEASUREMENTS
1. Taken from point indicated to chassis with a wide-band oscilloscope.
2. Oscilloscope synced near sweep rate indicated.
3. Taken with strong signal; contrast control at maximum; all other controls in normal operating position.
CAPACITORS - Unless otherwise specified, values less than one in MF; all others in MMF.

MOTOROLA MODELS Y17P6-1, Y17P6-2, Y17P6-3, 17P6-1, 17P6-2, 17P6-3 (CH. TS-433, Y)

Schematic Diagram Courtesy of Motorola Inc.



OLYMPIC MODELS CRW212B, BU, M, MU, TRW203B, BU, M, MU (CH. JRW)

Schematic Diagram Courtesy of Olympic Radio & Television Inc.

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